The Journal of Sex Research

ISSN: 0022-4499 (Print) 1559-8519 (Online) Journal homepage: http://www.tandfonline.com/loi/hjsr20

The Sexual Health of Transgender Men: A Scoping Review

Rob Stephenson, Erin Riley, Erin Rogers, Nicolas Suarez, Nick Metheny, Jonathan Senda, Kate M. Saylor & José A. Bauermeister

To cite this article: Rob Stephenson, Erin Riley, Erin Rogers, Nicolas Suarez, Nick Metheny, Jonathan Senda, Kate M. Saylor & José A. Bauermeister (2017): The Sexual Health of Transgender Men: A Scoping Review, The Journal of Sex Research, DOI: 10.1080/00224499.2016.1271863

To link to this article: http://dx.doi.org/10.1080/00224499.2016.1271863

Published online: 31 Jan 2017.

Submit your article to this journal

Article views: 26

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
http://www.tandfonline.com/action/journalInformation?journalCode=hjsr20

Download by: [The UC San Diego Library] **Date:** 03 February 2017, At: 06:51

THE JOURNAL OF SEX RESEARCH, *00*(00), 1–22, 2017
Copyright © The Society for the Scientific Study of Sexuality
ISSN: 0022-4499 print/1559-8519 online
DOI: 10.1080/00224499.2016.1271863

Routledge
Taylor & Francis Group

The Sexual Health of Transgender Men: A Scoping Review

Rob Stephenson and Erin Riley
Department of Health Behavior and Biological Sciences, School of Nursing, and Center for Sexuality and Health Disparities, University of Michigan

Erin Rogers and Nicolas Suarez
Center for Sexuality and Health Disparities, University of Michigan

Nick Metheny
Department of Health Behavior and Biological Sciences, School of Nursing, and Center for Sexuality and Health Disparities, University of Michigan

Jonathan Senda
Center for Sexuality and Health Disparities, University of Michigan

Kate M. Saylor
Taubman Health Sciences Library, University of Michigan

José A. Bauermeister
Department of Family and Community Health, University of Pennsylvania School of Nursing

There is a general paucity of research concerning the sexual health of transgender individuals, and most existing research focuses on transgender women. A scoping review concerning the sexual health of transgender men was conducted to identify gaps in the literature and to highlight opportunities for future research and intervention. A comprehensive search of seven databases was conducted. The Joanna Briggs Institute Reviewers' Manual *was used as a framework. Some 7,485 articles were initially identified using a search strategy applied to seven online databases: 54 articles were identified as relevant to the research questions and reviewed in detail; of those, 33 were included in the final analysis. Studies were conceptualized into four broad themes: sexual behaviors, sexual identity, sexual pleasure and sexual function, and transactional sex. Besides an overall lack of research, existing studies were often characterized by small convenience samples that do not allow for generalization to the larger population of transgender men. Significant gaps in the literature regarding sexual coercion, sexual and intimate partner violence, and relationship quality and functioning among transgender men exist. There is a need to improve the scope and depth of research examining the sexual health of this population, especially concerning sexual risk behaviors and structural barriers to sexual health care access.*

Although there is growing interest in transgender populations and their health, the sexual health of transgender men is an area that is not well represented in research and scientific literature. For this article, the term *transgender* will be used to describe anyone whose gender identity or gender expression differs from their sex assigned at birth (Fenway Health, 2010). The term *transgender man/men* will be used to refer to individuals who were assigned female sex at birth and who identify as something other than female, including but not limited to male, transgender, or transgender male, or transgender masculine. In this review we also use the term *cisgender* to refer to persons whose gender identity is the same as their sex assigned at birth.

There is a significant lack of comprehensive research around transgender men's sexual health. Prior research has suggested that the dearth of research on transgender men in general, and specifically related to their sexual health, is in part due to the difficulties of recruiting transgender men into

Correspondence should be addressed to Rob Stephenson, University of Michigan, School of Nursing, Department of Health Behavior and Biological Sciences, 400 North Ingalls Building, Ann Arbor, MI 48109. E-mail: rbsteph@umich.edu

research studies and the difficulty in estimating the number of transgender men worldwide (Flores, Herman, Gates, & Brown, 2016; Kenagy, Hsieh, & Kennedy, 2005). Sexual health research that exists for transgender men has focused on the experiences of sex work, sexually transmitted infections (STIs), the process of medical transition, and human immunodeficiency virus (HIV) risk (Bauermeister, Hickok, Meadowbrooke, Veinot, & Loveluck, 2013; De Haan, Santos, Arayasirikul, & Raymond, 2015; Reisner & Murchison, 2016; Williams, Weinberg, & Rosenberger, 2016). While these areas of research are important, many other aspects of sexual health have not been addressed for transgender men. Components of sexual health also include the act of sex, sexuality, sexual and gender identities, sexual behaviors, medical transition, and sexual pleasure and function. The intention of this review is to examine the state of the literature around the sexual health of transgender men with a specific focus on sex and sexual behaviors, sexual identity, sexual pleasure and function, and transactional sex.

Transgender men are a diverse community with a broad spectrum of sexual identities, lifestyles, and behaviors facing unique health needs (Bauer, Redman, Bradley, & Scheim, 2013). Considering the lack of research regarding transgender men's sexual health, as well as the demonstrated economic and social hardships faced by many transgender men, further research concerning transgender men is necessary for informing the development of interventions that recognize the sexual health needs of transgender men (Safer et al., 2016). Other reviews have explored aspects of the sexual health of transgender men but with different focuses than those in this review (Herbst et al., 2008; Reisner & Murchison, 2016). Herbst et al. (2008) focused primarily on sexual risk behavior among transgender people in the United States (including transgender women) associated with the risk of HIV and STIs. The review by Reisner and Murchison (2016) focused on transgender men worldwide but looked only at sexual behavior as it pertained to HIV and STI risk. This review will provide a much-needed evaluation of what is known about the sexual behaviors, health, and the sexual health needs of transgender men, rather than focusing on transgender men only through the lens of HIV risk. This scoping review serves to examine the current literature regarding the sexual health of transgender men and to evaluate current gaps in the literature to better inform future research on transgender men's sexual health and well-being.

Method

Scoping reviews are used to map out what is known about a topic, or the available information of a topic, to determine where there are potential gaps in the literature and to assess the state of knowledge about a specific subject (Anderson, Allen, Peckham, & Goodwin, 2008; Enrich, Freeman, Richards, Robinson, & Shepperd, 2002; Hidalgo Landa et al., 2011). This scoping review is based on the methodology described and outlined in *The Joanna Briggs Institute* (JBI) *Reviewers' Manual*'s 2015 methodology for JBI scoping reviews. Our process followed the scoping review framework as outlined by Arksey and O'Malley (2005): (a) identify the research question, (b) identify relevant studies, (c) develop a comprehensive search strategy, (d) select items for study, (e) chart the data, and (f) collate, summarize, and report the results. In the sections that follow, we describe these stages in more depth.

Identify the Research Question

After reviewing definitions of sexual health, the research team decided to focus on four main areas of sexual health: sexual behaviors, sexual identity, sexual pleasure and function, and transactional sex. The objective of this scoping review was to examine the sexual health of transgender men. After defining the research objectives, the research term focused on formulating the research questions for the scoping review. The broad research question asked was this: "What is known about the sexual health of transgender men?"

Identify Relevant Studies

Using the methods outlined in the 2015 methodology for JBI scoping reviews (Joanna Briggs Institute, 2015), our search strategy was created to be as broad as possible to decrease the possibility of missing articles relevant to this scoping review.

Develop a Comprehensive Search Strategy

An informationist from the Taubman Health Sciences Library at the University of Michigan worked with the review team on the development of an initial PubMed search strategy based on the concept search terms *transgender men* and *sexual behaviors*. Additional controlled vocabulary and search terms were identified by reviewing the titles and abstracts of relevant results. The informationist revised the initial PubMed search strategy and translated it for six additional databases: CINAHL, PsycINFO, Social Sciences Abstracts, LGBT Life, Embase, and Web of Science. All searches strategies were reviewed and revised by the team, as useful terms were discovered across the various databases. All of the search strategies and keyword searches are included in the appendix. The search was limited to peer-reviewed publications published after January 1, 2000, through May 4, 2016. Conference proceedings, gray literature, and non-English publications were not included in this review. The informationist ran the final searches and exported citations into a shared RefWorks account. The combined database searches yielded 9,379 records, of which 1,894 duplicate records were removed prior to the review. The final review examined 7,485 records. A flowchart of the study selection process is provided in Figure 1.

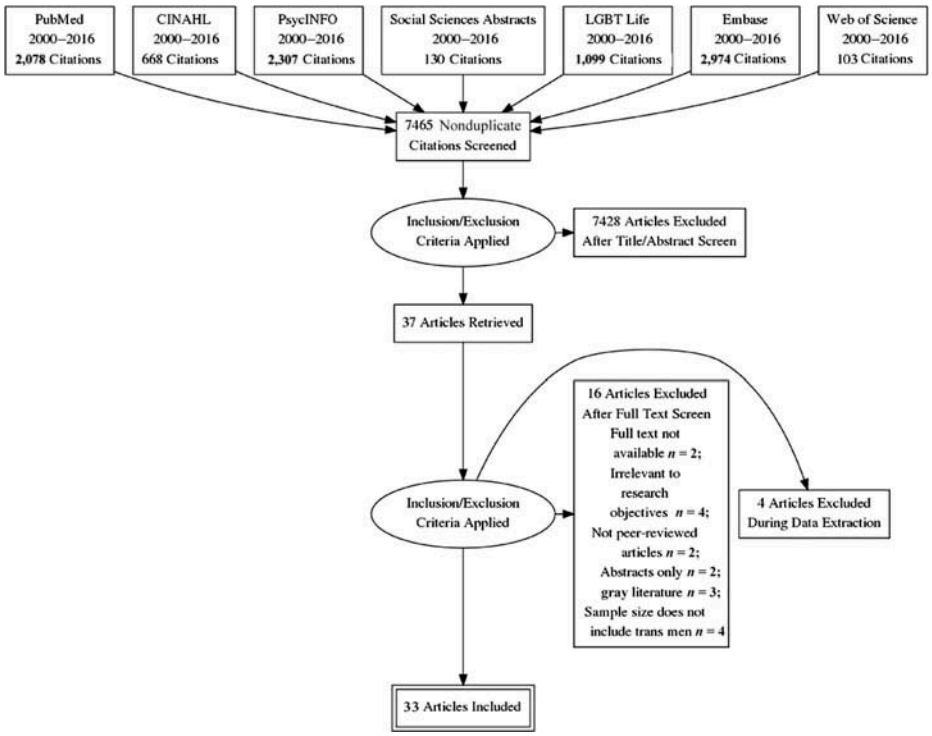

Figure 1. Flowchart showing the selection process for the scoping review.

Select Items for Study

After all the citations of the research studies were exported from the seven databases, all titles and abstracts were reviewed by two investigators from the research team. All papers were reviewed by reading the titles and abstracts of the citations. The title and abstract review used the following inclusion criteria: publication in English, published after the year 2000 in a peer-reviewed journal, and study participants included transgender men or a subgroup of transgender men. All articles meeting these criteria were read in their entirety by members of the research team.

From the initial 7,485 articles found, 7,431 articles were excluded during title and abstract review due to the lack of relevancy to the research question and/or because the articles were solely based on transgender women's health. Out of 7,485 articles, 54 research studies were included in the full text review. Of these 54 studies, 18 research articles were excluded due to a study design that did not distinguish between transgender male and transgender female participants, a lack of transgender men participants, not having full text available in the article, or having a sample size that was too small. After applying all inclusion and exclusion criteria, 33 research studies were included (see Figure 1).

Chart the Data

To chart the data from the included research studies, a spreadsheet was created, hosted securely online, and made available to all team members. The spreadsheet included sections for the title of the research studies, the authors, publication year, type of article, aims and purposes, sample size, methodologies, intervention, intervention type, outcomes and results, key findings, and relevant points of information from each included research study. The extracted data were discussed between all members of the research team to identify the emerging themes along the four main areas of interest to remain within the realm of the scoping review objective and questions.

Collate, Summarize, and Report the Results

After the team divided the research studies into four main areas of interest, each member of the research team took a section to further analyze major themes and research findings. A further exploration of major themes and research findings appears in the Results section.

Results

In the final 33 included articles, studies took place in the United States, Canada, Belgium, Germany, Norway, the Netherlands, Brazil, Italy, Czech Republic, and England. These studies fell into four main focuses of this review: sexual behaviors (18), sexual identity (2), sexual pleasure and function (10), and transactional sex (3). There was often overlap between studies in different sections. A description of the studies and their key findings are found in Table 1.

Table 1. *Description of Included Articles in the Scoping Review*

Title	Year	Author	Country	Publication	Sample Size/ Study Population	Study Design	Methods	Key Findings
High heterogeneity of HIV-related sexual risk among transgender people in Ontario: A province-wide, respondent-driven sampling survey	2012	Bauer et al.	Ontario, Canada	*Canadian Journal of Infectious Diseases and Medical Microbiology*	433 trans participants, 227 trans men	Longitudinal study	Multimode survey using respondent-driven sampling	Trans men more likely to be living as core gender as compared to trans women; 25% of trans men participants reported high risk sex in past year; unprotected receptive genital sex was most common type of high risk sex
Sexual health of trans men who are gay, bisexual, or who have sex with men: Results from Ontario, Canada	2013	Bauer et al.	Ontario, Canada	*International Journal of Transgenderism*	433 participants, 227 trans men	Longitudinal study	Self-reported measures of sexual behaviors using subscale of Multidimensional Sexual Self-Concept Questionnaire; sexual body image assessed using 7-item scale	Trans men identified as full range of sexual orientations; 63.3% of trans men identified as genderqueer; one-third participants reported unprotected receptive genital sex
Gay and bisexual identity development among female-to-male transsexuals in North America: Emergence of a transgender sexuality	2009	Bockting et al.	United States	*Archives of Sexual Behavior*	33 trans men	Mixed methods	Participants recruited through an outpatient sexual health clinic, a transgender electronic mailing list, and snowball sampling; 90-minute semistructured interviews; participants completed questionnaire that assessed demographic information, sexual orientation, gender identity, social sex role, sexual satisfaction, self-esteem, and psychological adjustment	More trans men identified as bisexual compared to trans women; no significant differences in groups in terms of self-esteem, sexual satisfaction, or self-acceptance
Sexual behavior of gender-dysphoric individuals before gender-confirming interventions: A European multicenter study	2014	Cerwenka et al.	Belgium, Germany, the Netherlands, Norway	*Journal of Sex and Marital Therapy*	380 male-to-female and female-to-male	Cohort study	Participants assessed by self-administered questionnaires, structured face-to-face clinical interviews, and diagnostic evaluation by clinicians	Common issues facing transgender men involve being regarded as male; navigating their bodies in sexual experiences; 50% use of genitals during sex

Sexual and physical health after sex reassignment surgery	2005	De Cuypere et al.	Belgium, the Netherlands	*Archives of Sexual Behavior*	55 transsexual patients; 23 female-to-male	Longitudinal survey	107 participants contacted to participate in research study; participants completed questionnaires and interviews	21 female-to-male had phalloplasty and 2 female-to-male did not have surgery; overall outcomes for phalloplasty was very satisfactory
Trans people's experience of sexuality in the Netherlands: A pilot study	2014	Doorduin & van Berlo	The Netherlands	*Journal of Homosexuality*	12 trans people	Cross-sectional survey	Semistructured interviews with 12 participants measuring gender identify, birth-assigned sex, body transformation, stage of transition; interviews conducted about sexual preferences, identity, sexual and romantic relationships, sex with other persons, masturbation, body experiences, sexual functioning, and meaning of sexuality	Body incongruence hinders sex and enjoyment of sex; abstinence, avoiding behaviors/ body parts were ways trans men coped; variety of sexual identifies
Total phallic reconstruction in female-to-male transsexuals	2010	Garaffa et al.	England	*European Urology*	115 female-to-male patients	Cohort study	Patients undergoing phallic reconstruction interviewed over a 26-month time	112 patients underwent surgery; 3 patients had to have reconstructive phallus removed, 97% of patients fully satisfied with size and feel of phallus, 86% of patients reported sensation
Overall satisfaction, sexual function, and the durability of neophallus dimensions following staged female to male genital gender confirming surgery: The Institute of Urology, London U.K. experience	2014	Garcia et al.	United States, England	*Translational Andrology and Urology*	25 female-to-male transsexuals	Cohort study	Patients who underwent suprapubic pedicle-flap phalloplasty were measured for flaccid length and girth and measured for sexual functioning of the neophallus	Female-to-male genital surgery patients reported high overall satisfaction of phalloplasty

(*Continued*)

Table 1. (*Continued*)

Title	Year	Author	Country	Publication	Sample Size/ Study Population	Study Design	Methods	Key Findings
Erectile implants in female-to- male transsexuals: Our experience in 129 patients	2010	Hoebeke et al.	Belgium	*European Urology*	129 female-to-male transsexuals	Cohort study	Over 11 years, trans men who received a neophallus were evaluated for sexual function	Out of 129 patients, 76 patients had original implant, 53 patients had implant removed due to infection, erosion, dysfunction, or leak
Transgender health: Findings from two needs assessment studies in Philadelphia	2005b	Kenagy	United States	*Health and Social Work*	182 transgender people; 69 female-to-male trans men	Analysis of two needs assessment surveys	Participants completed qualitative interviews and interviewer-administered demographic, sexual risk, substance use, and psychosocial surveys	Trans men had low rates of HIV as compared to trans women; majority of trans men did not test for HIV in past 6 months; 59.4% of trans men engaged in unprotected sex; trans men of color had higher rate of HIV due to unprotected sex
Follow-up of sex reassignment surgery in transsexuals: A Brazilian cohort	2006	Lobato et al.	Brazil	*Archives of Sexual Behavior*	19 patients; 18 male-to-female and 1 female-to-male	Cohort study	Patients who received sex reassignment surgery between 2000 and 2004 had two-year follow-up and evaluation via written questionnaire	Individuals who received sex reassignment surgery had to have surgery one year before; only one trans man in study sample—difficult to obtain conclusive results
A mixed methods study of the sexual health needs of New England trans men who have sex with other nontransgender men	2010	Reisner et al.	United States	*AIDS Patient Care and STDs*	16 trans men	Mixed methods: Qualitative interview and quantitative analysis	Participants completed qualitative interview, venue-based recruitment strategies/ snowball/chain referral sampling methods; participants asked questions about demographics, sexual behavior, and drug use	HIV/STIs not in top three health concerns; 31.1% did not receive gynecological care in past year; several participants asked for condoms to decrease sexual risk during intercourse
The sexual habitus of transgender men: Negotiating sexuality through gender	2014	Schilt & Windsor	United States	*Journal of Homosexuality*	74 trans men	Cohort study	Between 2003 and 2008, in-depth interview with 74 trans men; participant observation during transgender conferences, workshops, support groups, organization meetings, and social events	Surgery may help as one transitions with conform of body; many did not receive genital surgery due to cost and health barriers
Genital sensitivity after sex reassignment surgery in transsexual patients	2007	Selvaggi et al.	Belgium	*Annals of Plastic Surgery*	232 operated transsexuals; 63 female-to-male and 44 male-to-female	Long-term sensitivity evaluation	Long-term sensitivity evaluation of 27 reconstruction phalli and 30 clitorises	Increased reported sensation of position, location, orientation, and movement of phallus; 85% of trans men reported ability to orgasm after surgery

New technique of total phalloplasty with innervated latissimus dorsi myocutaneous free flap in female-to-male transsexuals	2007	Vesely et al.	Italy, Czech Republic	*Annals of Plastic Surgery*	22 trans men	Cohort study	Patient follow-up within 11 months of surgery	Overall, neophallus achieves some functioning with patients being able to maintain erection, but procedure is still not optimal
Quality of life and sexual health after sex reassignment surgery in transsexual men	2011	Wierckx et al.	Belgium	*Journal of Sexual Health*	49 transsexual men	Cross-sectional study	Single-center, cross-sectional study in 49 transsexual men after long-term testosterone therapy and 8 years after sexual reassignment surgery	No differences between participants who underwent phalloplasty with or without erection prosthesis, sexual satisfaction with partner, frequency of sexual arousal, orgasm, and masturbation
Am I man enough yet? A comparison of the body transition, self-labeling and sexual orientation of two cohorts of female-to-male transsexuals	2011	Yerke & Mitchell	United States	*International Journal of Transgenderism*	16 trans men	Cohort study	Participants gave interviews between 60 and 90 minutes using open-ended interviews	Younger trans men showed more fluidity in sexual preferences and less desire for genital surgeries than older trans men

Location and Length of Studies

Twenty-nine studies were conducted in a single country; 18 studies took place in the United States alone, as well as four in Belgium, two in Canada, two in the United Kingdom, one in Brazil, one in the Czech Republic, and one in The Netherlands (Bauer et al., 2013; Chen, McFarland, Thompson, & Raymond, 2010; Clements-Nolle, Marx, Guzman, & Katz, 2001; De Cuypere et al., 2005; Doorduin & Berlo, 2014; Garaffa, Christopher, & Ralph, 2010; Garcia, Christopher, De Luca, Spilotros, & Ralph, 2014; Hoebeke et al., 2010; Horvath, Iantaffi, Swinburne-Romine, & Bockting, 2014; Kenagy, 2005a; Lobato et al., 2006; Reisner, Perkovich, & Mimiaga, 2010; Reisner et al., 2015; Rowniak, Chesla, Rose, & Holzemer, 2011; Rowniak & Chesla, 2013; Schilt & Windsor, 2014; Selvaggi et al., 2007; Stephens, Bernstein, & Philip, 2010; Herbst et al., 2008). Of the 18 studies conducted in the United States alone, more than half (n = 10, 55%) took place in two major cities (Rowniak et al., 2011; Rowniak & Chesla, 2013; Williams et al., 2016; Stephens et al., 2010; Chen et al., 2010; Clements-Nolle et al., 2001; Kenagy, 2005a, 2005b; Kenagy et al., 2005; Kashdan et al., 2014). Six (33%) studies were conducted in San Francisco, California (Chen et al., 2010; Clements-Nolle et al., 2001; Rowniak & Chesla, 2013; Rowniak et al., 2011; Snell, 1998; Williams et al., 2016), and four (22%) were conducted in Philadelphia, Pennsylvania (Kenagy, 2005a, 2005b; Kenagy et al., 2005). Three studies were conducted in two or more countries: one in the United States and Canada; one in Belgium, Germany, the Netherlands, and Norway; and one conducted online with respondents from 19 unspecified countries (Bockting, Benner, & Coleman, 2009; Cerwenka et al., 2014; Meier, Pardo, Labuski, & Babcock, 2013). Twenty-one of the 32 studies reported study period length, indicating either length of time for recruitment or length of time covered in retrospective analysis. This time ranged from three months to 139 months (M = 32, SD = 36) (Hoebeke et al., 2010; Xavier & Bradford, 2005).

Recruitment Strategies

Sixteen studies recruited transgender men from a health care setting. Eight studies recruited transgender men attending visits at health clinics (Bockting et al., 2009; Bockting, Robinson, Forberg, & Scheltema, 2005; Cerwenka et al., 2014; Garcia et al., 2014; Rowniak et al., 2011; Yerke & Mitchell, 2011). Seven studies retrieved information regarding former patients via medical notes and records (Chen et al., 2010; Garaffa et al., 2010; Hoebeke et al., 2010; Reisner et al., 2015; Selvaggi et al., 2007; Stephens et al., 2010). Four studies specifically recruited former patients by telephone, letter, or e-mail (De Cuypere et al., 2005; Garcia et al., 2014; Selvaggi & Bellringer, 2011; Wierckx et al., 2011). Twelve studies recruited transgender men via community organizations and events. This included posting of flyers at lesbian, gay, bisexual, and transgender (LGBT) community centers, support groups for transgender men, and conferences or electronic posts in transgender men discussion forums, online community pages, personal websites, craigslist, and electronic mailing lists (Bockting et al., 2009; Bockting et al., 2005; Horvath et al., 2014; Meier et al., 2013; Reisner et al., 2010; Rowniak & Chesla, 2013; Rowniak et al., 2011; Schilt & Windsor, 2014; Sevelius, 2009; Williams et al., 2016; Yerke & Mitchell, 2011). One study contacted potential participants directly via telephone (Doorduin & Berlo, 2014). Fourteen studies enlisted the help of eligible participants to recruit additional participants. Ten studies used snowball sampling to recruit additional participants (Bockting et al., 2009; Kenagy, 2005b; Kenagy et al., 2005; Wierckx et al., 2011; Herbst et al., 2008; Xavier & Bradford, 2005; Reisner et al., 2010; Sevelius, 2009; Wierckx et al., 2011; Xavier & Bradford, 2005; Yerke & Mitchell, 2011). Four studies used respondent-driven sampling (Bauer et al., 2013; Bauer, Travers, Scanlon, & Coleman, 2012; Clements-Nolle et al., 2001; Williams et al., 2016).

Study Samples

Eligibility requirements varied greatly across studies. Twenty-one studies used definitions of gender identity that included individuals who did not fully identify with their assigned sex at birth, individuals who were assigned female sex at birth but identified along the trans-masculine spectrum, or individuals who were assigned female sex at birth and later transitioned, without any specific requirements for receiving medical gender-affirmation services (Bauer et al., 2012; Bauer et al., 2013; Bockting et al., 2005; Chen et al., 2010; Clements-Nolle et al., 2001; Doorduin & Berlo, 2014; Horvath et al., 2014; Kenagy et al., 2005; Kenagy, 2005a, 2005b; Xavier & Bradford, 2005; Sevelius, 2009; Meier et al., 2013; Reisner et al., 2010; Reisner & Murchison, 2016; Reisner et al., 2015; Schilt & Windsor, 2014; Stephens et al., 2010; Williams et al., 2016; Yerke & Mitchell, 2011). Two studies required a confirmed mental health diagnosis related to gender identity (Cerwenka et al., 2014; Lobato et al., 2006). Eleven studies specifically recruited participants who had previously accessed medical gender-affirmation services, such as hormones and surgery (Bockting et al., 2009; De Cuypere et al., 2005; Garaffa et al., 2010; Garcia et al., 2014; Hoebeke et al., 2010; Lobato et al., 2006; Reisner et al., 2015; Rowniak & Chesla, 2013; Rowniak et al., 2011; Selvaggi et al., 2007; Wierckx et al., 2011). Of these 11, four studies recruited patients who underwent a specific surgical technique (Garaffa et al., 2010; Garcia et al., 2014; Hoebeke et al., 2010; Reisner et al., 2015). Three studies required a minimum one-year follow-up period following surgery (De Cuypere et al., 2005; Selvaggi et al., 2007; Wierckx et al., 2011). Four studies had specific criteria related to participants' sexual orientation. These studies recruited only transgender men who reported to either identify as gay, bisexual, pansexual, or queer, to not be exclusively attracted to women, or to have reported sexual behavior with a

cisgender or transgender man in the past year, regardless of identity (Bauer et al., 2013; Bockting et al., 2009; Reisner et al., 2010; Sevelius, 2009).

Types of Data

Nineteen studies used a single collection strategy: four studies extracted data from electronic health records (Hoebeke et al., 2010; Reisner et al., 2015; Reisner & Murchison, 2016; Stephens et al., 2010), nine studies administered questionnaires (Bauer et al., 2012; Bauer et al., 2013; Bockting et al., 2005; Chen et al., 2010; Kenagy et al., 2005; Kenagy, 2005a; Meier et al., 2013; Wierckx et al., 2011; Xavier & Bradford, 2005), and six studies conducted in-depth interviews (Doorduin & Berlo, 2014; Kenagy, 2005a; Kenagy, Hsieh, & Kennedy, 2005; Rowniak et al., 2011; Rowniak & Chesla, 2013; Williams et al., 2016; Yerke & Mitchell, 2011). Ten studies used a mixed methods approach for data collection. Four studies administered questionnaires and conducted interviews with participants (Bockting et al., 2009; Schilt & Windsor, 2014; Sevelius, 2009). One study administered questionnaires and physically examined participants (Reisner et al., 2015). Two studies administered questionnaires, conducted interviews, and physically examined participants (De Cuypere et al., 2005; Garcia et al., 2014). One study conducted interviews and provided HIV testing to participants. Two studies interviewed and physically examined participants (Garaffa et al., 2010; Selvaggi et al., 2007).

In-depth interviews ranged in time from one to three hours. Common interview topics included social and demographic characteristics, sexual behavior, sexual identity, experiences of stigma, and violence (Bockting et al., 2009; Doorduin & Berlo, 2014; Herbst et al., 2008; Kenagy et al., 2005; Reisner et al., 2010; Rowniak & Chesla, 2013; Schilt & Windsor, 2014; Williams et al., 2016; Yerke & Mitchell, 2011). Two interviews were specifically tailored to transgender men who had sex with cisgender men, and asked questions about sexual behaviors with cisgender men, perceptions of HIV and STI risk and social networks, and ideas for HIV prevention and interventions among this specific group (Reisner et al., 2010; Sevelius, 2009). Participants of another study were encouraged to comment on questions and to bring up additional themes during the interview (Doorduin & Berlo, 2014). Questionnaires commonly probed for information on demographics, sexual identity, sexual behavior and sexual risk, gender identity, psychological adjustment, history of STIs, HIV status and testing, violence and abuse, sex work, and access to health care (Bockting et al., 2009; Kenagy et al., 2005; Reisner et al., 2010; Sevelius, 2009).

Eight studies focused on the outcomes of gender-affirmation surgery (De Cuypere et al., 2005; Garaffa et al., 2010; Hoebeke et al., 2010; Lobato et al., 2006; Reisner et al., 2015; Selvaggi et al., 2007; Wierckx et al., 2011). Seven of the eight studies included a physical examination as part of the clinical evaluation (De Cuypere et al., 2005; Garaffa et al., 2010; Hoebeke et al., 2010; Lobato et al., 2006; Reisner et al., 2015; Selvaggi et al., 2007; Wierckx et al., 2011). Six of the eight studies included a patient interview during the clinical evaluation (De Cuypere et al., 2005; Garcia et al., 2014; Hoebeke et al., 2010; Lobato et al., 2006; Reisner et al., 2015; Selvaggi et al., 2007). Common interview topics included general satisfaction with surgical outcomes, specific satisfaction with neophallus, and ability to achieve orgasm (Garaffa et al., 2010; Garcia et al., 2014; Sevelius, 2009). Four of the eight studies included a questionnaire during the clinical evaluation (De Cuypere et al., 2005; Lobato et al., 2006; Reisner et al., 2015; Wierckx et al., 2011). Common questionnaire topics included general satisfaction with surgical outcomes, as well as ability to have and satisfaction with sexual intercourse following gender-affirmation surgery (De Cuypere et al., 2005; Lobato et al., 2006; Reisner et al., 2015; Wierckx et al., 2011).

Sexual Behaviors

Sexuality is a broad term describing sexual expression, taking into account sexual experiences and integrating partner preference, gender identity, and sexual practices (Jackson, 2006). Sexuality is a complex component of an individual's identity and carries broad implications for a person's physical and mental health (Abramson & Pinkerton, 1995; Castelo-Branco, León Huezo, & Ballescá Lagarda, 2008; World Health Organization, n.d.). Research at the intersection of human sexuality and health is increasing, but only recently has transgender sexual health become a health priority. This is evident in the call for more research on transgender care after a 2011 National Institutes of Health review found many gaps in existing research of transgender health (Bauer et al., 2012; Bockting et al., 2016). For transgender men, sexual experiences can work to affirm their gender identity, which may help facilitate self-awareness and acceptance of their sexual attractions and identities (Bockting et al., 2009). As referenced by Doorduin and Berlo (2014), research on transgender men's sexual health often "addresses sexuality in order to uncover psychological pathologies said to drive trans identity, the risk of HIV transmission, or sociocultural norms around gender and sexual identity" (p. 654) rather than being focused on how the individual experience of sexuality may affect health outcomes. Regarding sexual behavior, these studies focused on how transgender men navigate their bodies when engaging in sexual behavior.

These studies focused on describing transgender men's sexual behaviors as they relate to differences in age and the development of identity (Cerwenka et al., 2014; Yerke & Mitchell, 2011). Many of these studies looked at sexual behaviors in the context of medical transition (Doorduin & Berlo, 2014; Schilt & Windsor, 2014). Some studies also looked at transgender men's sexuality in terms of risk behavior, as well in the context of sexual and romantic

relationships (Bauer et al., 2013; Bauer et al., 2012; Doorduin & Berlo, 2014; Reisner et al., 2010). The results of these studies had two major themes: transgender men identify with a wide range of sexual identities, and transgender men participate in a wide range of sexual behaviors.

A common theme in the research identified involved transgender men finding ways to feel most comfortable in their bodies while engaging in sexual behavior. Some transgender men experience gender dysphoria—the discomfort or distress associated with having a gender identity that differs from the sex a person is assigned at birth—and this may lead some transgender men to choose not to engage in sexual behaviors that involve their genitals (Doorduin & Berlo, 2014). Transgender men may also choose their own names for their anatomy, reimagine their physical bodies, or use toys and prostheses to better navigate sexual encounters with others (Schilt & Windsor, 2014).

Two studies mentioned transgender men's use of the Internet in seeking sexual partners, which allowed them to find their own comfort discussing their gender identity prior to meeting a potential partner and engaging in sexual behavior (Reisner et al., 2010; Sevelius, 2009). For many transgender men, potential cisgender male partners' awareness and acceptance of their gender identity was instrumental in determining whether they wanted to pursue a sexual relationship (Sevelius, 2009). Transgender men often reported a shift toward casual sexual relationships with gay men, which tended to be more sexually focused and impersonal (Rowniak & Chesla, 2013; Rowniak et al., 2011; Williams et al., 2016). Transgender men frequently reported a need to be sexually affirmed in their masculinity, which for many involved the sexual attention of gay men (Rowniak et al., 2011).

Vaginal and oral sex varied among transgender men (Bauer et al., 2013; Chen et al., 2010; Kenagy et al., 2005). Vaginal penetration, however, was seen as "female-defining" and demasculinizing for some transgender men, even though it could be pleasurable (Williams et al., 2016). One study found transgender men felt more comfortable engaging in vaginal sex once they felt stronger body congruence after beginning hormones (Bockting et al., 2009). Though gender identity is sometimes wrongly assumed to be based solely on an individual's physical body, not all transgender men seek medical gender-affirmation services. Each individual's transition-related goals differ, but some may seek to gain comfort with their physical and sexual body through this process (Schilt & Windsor, 2014).

Transgender men often reported a shift in sexual practices and their own sexual embodiment through the process of medical gender affirmation, specifically hormone therapy (Rowniak & Chesla, 2013; Rowniak et al., 2011; Williams et al., 2016). Participants in one study reported a marked experience of hypersexuality, which several attributed to testosterone treatment (Rowniak et al., 2011). Transgender men often reported a shift toward casual sexual relationships with gay men, which tended to be more sexually focused and impersonal (Rowniak & Chesla, 2013; Rowniak et al., 2011; Williams et al., 2016). Transgender men frequently reported a need to be affirmed in their masculinity, which for many involved the sexual attention of gay men (Rowniak et al., 2011). Being with heterosexual women was also important in affirming masculinity in transgender men who identified as straight (Williams et al., 2016).

Several articles were found to have specifically studied the use of condoms and/or unprotected sex among transgender men. It is important to note that these articles limited "unprotected sex" to condomless sex using genitals that were either surgically constructed or those with which a person was born. This is meant to exclude intercourse that makes use of prosthetic genitals, which do not carry the same risk for transmitting disease. Further, these articles were published prior to the large-scale availability of pre-exposure prophylaxis (PrEP) and other noncondom prevention methods, such as microbicides (Dimitrov, Mâsse, & Donnell, 2016). All studies took place in North America. While these articles comprise a separate section for synthesis, articles from other sections that discuss condom use or risky sexual behaviors, such as unprotected vaginal or anal intercourse or intercourse under the influence of drugs and alcohol, are included as well.

Because sexual behaviors in this population are often more nuanced than in cisgender men, it is important to fully explore the sexual risk profiles of this population. All articles mentioned the need to fully address how transgender men engage in sexual behavior and not, as one study said, assume that transgender men do not engage in certain types of sex, such as insertive or receptive vaginal intercourse (Bauer et al., 2012). In fact, some participants in nearly every study reported engaging in both receptive and insertive vaginal and anal intercourse with both cisgender and transgender partners (Bauer et al., 2012; Chen et al., 2010; Kenagy, 2005a; Kenagy et al., 2005; Reisner et al., 2010; Selvaggi & Bellringer, 2011; Sevelius, 2009).

Results found that the overall incidence of condomless vaginal and/or anal sex varied widely among studies. Several of the larger studies showed that fewer than 15% of respondents reported at least one act of unprotected vaginal or anal sex in the past 12 months (Anderson et al., 2008; Kenagy et al., 2005; Meier et al., 2013; Reisner et al., 2010). Three studies reported 20% to 50% of respondents had had unprotected receptive vaginal and/or anal sex in the past year and two reported more than 60% had done so (Chen et al., 2010; Kenagy et al., 2005; Reisner & Murchison, 2016; Reisner et al., 2010). Across studies, receptive vaginal sex was the most common type of condomless intercourse (Bauer et al., 2012; Bauer et al., 2013; Chen et al., 2010; Kenagy et al., 2005; Reisner et al., 2010). In one study, 73.5% of transgender men of color reported unprotected oral, anal, or vaginal sex in the past year, versus 22.4% of White transgender men (Kenagy et al., 2005). However, more recent studies found no differences in sexual risk taking between racial groups or by degree of rurality (Anderson et al., 2008; Horvath et al., 2014; Reisner et al., 2010). However, transgender men who have sex with

cisgender men may use condoms less often than those who have sex only with cisgender women or transgender partners (Sevelius, 2009). Reasons for increased sexual health risks among transgender men were largely structural and included reduced access to primary care services and health promotion resources that are trans inclusive due to lack of local availability, discrimination, and a disproportionate lack of health insurance coverage (Anderson et al., 2008; Clements-Nolle et al., 2001; Kenagy et al., 2005; Reisner et al., 2010; Sevelius, 2009; Xavier & Bradford, 2005). A financial burden to obtaining appropriate medical care was also highlighted, with 43.2% of transgender men in one study reporting they were unable to obtain general medical care because of cost (Kenagy et al., 2005; Reisner et al., 2010). These structural issues are especially pronounced in communities of transgender men of color (Kenagy et al., 2005).

Many transgender men either frequently negotiated condom use before intercourse, citing the Internet as a safe way to set boundaries and disclose a transgender identity with potential partners before meeting in person, or not engage in sex at all, as 25% of the sample in Bauer et al. (2012) and 20% of the sample in Clements-Nolle et al. (2001) reported (Clements-Nolle et al., 2001; Reisner et al., 2010; Rowniak et al., 2011; Sevelius, 2009). The risk for HIV among transgender men seems to be less acute, as shown by lower self-reported rates of HIV, lower levels of condomless intercourse, more accurate knowledge regarding condom effectiveness, and higher HIV-testing rates (Anderson et al., 2008; Bauer et al., 2012; Horvath et al., 2014; Kenagy et al., 2005; Reisner et al., 2010; Sevelius, 2009).

However, this is not meant to discount transgender men's sexual health risks overall or generalize these findings to the entire community. Transgender men still reported irregular HIV and STI testing across articles, with 19% to 25% of respondents in three studies reporting not testing for HIV in the past two years, even in the presence of unprotected intercourse. Kenagy (2005b) also found longer intervals between test and interview among transgender men (Anderson et al., 2008; Kenagy et al., 2005; Reisner et al., 2010). This same article also found that more than half of transgender men respondents reported they would likely engage in a high-risk sexual activity, such as condomless sex or sex under the influence of drugs or alcohol, in the future (Kenagy et al., 2005). Heavy alcohol use and frequent sex under the influence of alcohol was corroborated in other studies as well (Reisner & Murchison, 2016; Reisner et al., 2015; Sevelius, 2009; Xavier & Bradford, 2005).

While attitudes toward condom use were not commonly discussed throughout the articles, there are components of condom use that are pertinent to transgender men but not cisgender men. Among transgender men who have cisgender male partners, respondents commonly cited that being desired sexually by a gay man (therefore gaining affirmation of their male identities) often superseded their desire to use a condom (Rowniak & Chesla, 2013; Sevelius, 2009). One study measured frequency of condom use in this population and found that, among transgender men with cisgender male partners, less than one-third (31%) of participants used condoms for vaginal sex and less than half (40%) used condoms for anal sex "all the time" (Sevelius, 2009). Considering the high rates of HIV among gay and bisexual cisgender men in the United States, inconsistent condom use in this population is cause for concern (Centers for Disease Control and Prevention, 2015). Second, condom use for the purpose of pregnancy avoidance was cited by two articles as a major reason for negotiating condom use, though this may be a concern for other transgender men as well (Reisner et al., 2010; Sevelius, 2009). The perceived risk profiles for anal and vaginal sex may differ for some transgender men and their partners, thereby suggesting that vaginal sex is less risky than anal sex for HIV and other STIs (Sevelius, 2009). This may negatively impact the use of condoms during vaginal sex. Finally, many transgender men face a litany of health and safety concerns, and protection against HIV, other STIs, and unintended pregnancy may not rank as highly as other concerns, such as availability of hormone therapy or physical safety (Reisner et al., 2010; Xavier & Bradford, 2005).

Sexual Identity

Sexual identity is a complex and fluid component of an individual's overall identity (Bockting et al., 2016; Iantaffi & Bockting, 2011). Transgender men may hold gay, bisexual, or other sexual orientation identities, and are not a homogeneously heterosexual community (Devor, 1993; Rowniak & Chesla, 2013). In an attempt to refute the long-standing assumptions about transgender men's sexuality, included studies explored the fluidity and variety of sexual identities of transgender men and how these identities may change with time and transition (Bauer et al., 2013; Doorduin & Berlo, 2014; Yerke & Mitchell, 2011). The studies also examined factors that may impact transgender men's sexualities such as current age and age at development of gender identity (Cerwenka et al., 2014; Yerke & Mitchell, 2011). These studies highlighted not only the variety of sexual identities that transgender men may hold but also the fluidity of these identities and how they may change across the span of their lives.

Sexual identities of transgender men are not limited to a set of identities but comprise an entire fluid spectrum of sexuality, ranging from "gay" to "straight," with most identifying somewhere in between (Bauer et al., 2013). Importantly, these identities are not static but may change over time and through the process of transition (Doorduin & Berlo, 2014; Schilt & Windsor, 2014; Yerke & Mitchell, 2011). For example, the majority of transgender men participating in one study reported that they identified as a sexual minority (not being exclusively attracted to cisgender women) (Bauer et al., 2013). Most of the participants in another study responded similarly, with 47% identifying as gay, queer, or bisexual, and 16% as other identities, such as pansexual and asexual (Schilt & Windsor, 2014). In one

study of transgender men in Ontario, Canada, approximately two-thirds were attracted to cisgender or transgender men (Bauer et al., 2013). Two-thirds of participants in another study on gay and bisexual transgender men initially identified as lesbian, which changed as these men transitioned (Bockting et al., 2009). This change from a lesbian sexual identity to a gay male identity was seen in other studies as well, with one study noticing that transgender men who identified as lesbians before transition were more likely to experience a shift in sexual attraction through transition (Jin et al., 2010; Wierckx et al., 2011). Throughout the process of transition, many transgender men reported a shift in their sexual identity across studies (Bockting et al., 2009; Meier et al., 2013; Rowniak & Chesla, 2013; Sevelius, 2009; Wierckx et al., 2011). Sexual identity was also found to vary among age groups. Younger transgender men were found to be more fluid in their sexual orientation and self-labeling of gender identity (Yerke & Mitchell, 2011).

Studies consistently found the majority of transgender men identify with a nonheterosexual identity, with heterosexual identity ranging in prevalence from 2.2% to 31% among study samples (Chen et al., 2010; Kenagy, 2005a, 2005b; Kenagy et al., 2005; Rye & Meaney, 2007; Sevelius, 2009). One study on HIV among transgender men found as many as 84.4% of their sample to identify as homosexual, with an additional 3.1% identifying as bisexual (Kenagy et al., 2005). Other studies have reported higher proportions of bisexual identity (more than half in some samples) (Meier et al., 2013; Reisner et al., 2015). Though the proportions of sexual identities varies greatly across studies, these different findings point to the great diversity of sexual identity among transgender men and rule out the assumption that transgender men seek transition to align with a heterosexual identity (Bauer et al., 2013).

Sexual Pleasure and Function

Sexual Pleasure

Sexual pleasure supports an individual's health and well-being, increases sexual fulfillment, enhances intimate relationships, and lowers social anxiety (Erickson-Schroth, 2014; Kashdan et al., 2014; Tepper, 2000). This pleasure can be pursued in many forms and can occur in solitary and/or partnered contexts (Rye & Meaney, 2007). While sexual pleasure may include pleasure and arousal, the studies tend to focus on these two areas of sexual pleasure and function. Many studies consistently measure sexual pleasure in terms of one's ability to be aroused and ability to achieve orgasm. Until recently, research on sexual pleasure did not include members of the transgender community. Studies that measure transgender men's experience of sexual pleasure primarily do so in the context of hormone replacement therapies. While this contributes to a better understanding of how hormones and surgery alter sensations in erogenous zones—such as genitalia and breasts—it fails to address the external components that influence an individual's experience of sexual pleasure (Erickson-Schroth, 2014). In addition to physical responses to hormones, pleasure is based on the activity of the mind, with perceptions, fantasy, and memory all playing complex roles in producing pleasurable outcomes—the biological components are rarely the entire picture (Hull, 2008). A limited number of studies have explored the influence of sexual partners and community support on transgender men's experience of sexual pleasure (Bockting et al., 2009; Wierckx et al., 2011).

Of the 33 reviewed studies, only eight studies included measures of transgender men's sexual pleasure. Five studies measured transgender men's experience of orgasm (Bockting et al., 2005; De Cuypere et al., 2005; Wierckx et al., 2011; Williams et al., 2016). All but one of these studies measured transgender men's experience of orgasm in the context of hormone replacement therapy and/or gender-affirmation surgery. Orgasm is primarily measured as the postoperative outcome of excellence for sexual health (Wierckx et al., 2011). Almost all participants reported the ability to achieve orgasm after gender-affirmation surgery. Almost all had reported that the orgasmic feeling had changed after gender-affirmation surgery. Orgasms were characterized as more powerful, shorter, and with higher intensity than before gender-affirmation surgery (De Cuypere et al., 2005; Wierckx et al., 2011; Williams et al., 2016). Three studies compared orgasm outcomes for participants who did and did not receive erectile prosthesis. Two studies observed no difference in orgasm after gender-affirmation surgery for these two groups (Garcia et al., 2014; Wierckx et al., 2011). Another study found that individuals who underwent phalloplasty without an erectile prosthesis more frequently experienced orgasm during masturbation and intercourse as compared to individuals who underwent phalloplasty with an erectile prosthesis (De Cuypere et al., 2005). When comparing transgender people who underwent gender-affirmation surgery, transgender men were able to more easily reach orgasm following surgery (De Cuypere et al., 2005). Transgender men also tended to appraise orgasm more frequently as pleasant following surgery (Cerwenka et al., 2014). One study compared transgender men and women's experience of orgasm, irrespective of hormonal treatment or gender affirmation surgery (Bockting et al., 2005). Both transgender men and women reported difficulty in achieving orgasm alone and with partners, with no significant difference between the two groups (Bockting et al., 2005).

Five studies measured transgender men's experience of sexual arousal (Bockting et al., 2009; De Cuypere et al., 2005; Wierckx et al., 2011). Three of these studies measured transgender men's experience of sexual arousal in the context of hormone replacement therapy and gender-affirmation surgery. Most participants reported an increase in arousal following gender-affirmation surgery (De Cuypere et al., 2005; Wierckx et al., 2011). One study measured sexual arousal in the context of transvestic fetishism, asking participants: "Have you ever felt sexually aroused by men's

clothing?" The term *transvestic* was used in the research study, which is problematic because it is not respectful to the transgender community and an archaic term that is not currently utilized in research. Thirty-two percent of transgender men participants reported being aroused by men's clothing (Bockting et al., 2009). One study compared transgender men and transgender women's experience of sexual desire and arousal (Bockting et al., 2005). Thirty-eight percent of the participants reported trouble getting aroused and 35% reported low sexual function with no significant difference between transgender women and transgender men (Bockting et al., 2005).

Two studies measured the influence of sexual partners and community support on transgender men's experience of sexual pleasure (Bockting et al., 2009; Wierckx et al., 2011). One study provided a separate questionnaire to transgender men participants who had a partner (Wierckx et al., 2011). When participants felt more sexually satisfied in their current relationship, they more frequently experienced sexual pleasure with their partner and experienced more sexual arousal and orgasm during intercourse (Wierckx et al., 2011). Greater sexual satisfaction with the partner was also correlated with increasing frequency of communication about sex and with less frequently avoiding sex (Wierckx et al., 2011). Researchers also found a positive correlation between satisfaction with erection prosthesis and sexual satisfaction with the partner (Wierckx et al., 2011). Participants of a different study reported that contact with others in the transgender community was instrumental in allowing themselves to explore and enjoy their body (Bockting et al., 2009).

Application of results found from the reviewed studies should be approached with caution. Four of the five studies reported small sample size as a limitation (Bockting et al., 2009; Cerwenka et al., 2014; Garcia et al., 2014). Three studies reported selection bias as a limitation (Cerwenka et al., 2014; Garcia et al., 2014; Wierckx et al., 2011). The following explanations were provided for potential selection bias: patients with more favorable outcomes may have been more willing to participate in the study; the sample may be representative only of individuals who were willing and able to attend the clinic; and it was impossible to retrieve postoperative information from patients who refused to participate (Garcia et al., 2014; Wierckx et al., 2011). One study reported cross-sectional design as a limitation (Wierckx et al., 2011). Items on preoperative sexual pleasure—including patients' ability to be aroused and achieve orgasm—were based on participants' recollection about their sexual history, which may have been influenced by later events (Wierckx et al., 2011). Ability to be aroused and achieve orgasm postoperatively also depends on the quality of the procedure, which is likely to vary center to center (Wierckx et al., 2011). There are varying degrees and frequencies of sexual pleasure that transgender men may experience (Erickson-Schroth, 2014). While sexual pleasure has the ability to provide sexual fulfillment and improve one's sexual health and well-being, it may not be at the top of every transgender man's agenda (Erickson-Schroth, 2014; Lawrence, 2003).

Sexual Function

Among the studies reviewed, seven included information pertaining to transgender men's sexual function. Six of the studies included information exclusively pertaining to the health of transgender men and one included information on both transgender men and transgender women (Bockting et al., 2009; De Cuypere et al., 2005; Garaffa et al., 2010; Garcia et al., 2014; Hoebeke et al., 2010; Selvaggi et al., 2007; Wierckx et al., 2011). Only one of the included articles had information pertaining to transgender men who did not undergo any gender-affirming surgery (Wierckx et al., 2011). Three of the articles were cohort studies, one was mixed methods, one was a longitudinal study, one was a long-term sensitivity evaluation, and one was a long term survey (Bockting et al., 2009; Garcia et al., 2014; Hoebeke et al., 2010; Reisner et al., 2015). Sexual function was typically measured with respect to the ability to have insertive vaginal, anal, and/or oral intercourse after different types of phalloplasty, while one study looked at function after surgery in terms of sensitivity with noninsertive vaginal, anal, and/or oral intercourse (Garaffa et al., 2010; Garcia et al., 2014; Hoebeke et al., 2010; Reisner et. al., 2015). One study looked at both phalloplasty and hormones and the resulting effects on transgender men's sexual lives (De Cuypere et al., 2005). The study by Bockting et al. (2009) was the only study to look at sexual functioning of transgender men irrespective of phalloplasty, though some participants did express desire for the surgery in the future (Bockting et al., 2009).

Five of the articles contained specific information focused on postsurgical patient follow-up (Garaffa et al., 2010; Garcia et al., 2014; Hoebeke et al., 2010; Reisner et al., 2015; Selvaggi et al., 2007). One study reported that complete phallic sensation was maintained for approximately 71.5% of people who underwent surgery (Garaffa et al., 2010). Three articles reported high success rates, with the majority of transgender men maintaining the ability to orgasm after surgery (Garcia et al., 2014; Selvaggi et al., 2007; Wierckx et al., 2011). Cosmetic satisfaction was identified in one study (Garaffa et al., 2010). Garaffa et al. (2010) stated that all subjects with surviving phallus reported satisfaction with cosmetic outcome (Garaffa et al., 2010). In this study, data were collected via telephone interview, and no objective scale was used. This study reported that 97% of 112 patients were fully satisfied with cosmetic outcomes as well as the size of the phallus (Garaffa et al., 2010).

Despite potential complications and risks, the majority of transgender men who received phalloplasty reported positive outcomes in sexual functioning (Garcia et al., 2014; Hoebeke et al., 2010). These interventions still present too many complications and have too high costs, however, deterring many transgender men from pursuing them, even if they do desire to have phalloplasty (Bockting et al.,

2009). Complications with phalloplasty included loss of sexual organ, malposition, necrosis, need for multiple surgeries, hematoma, vascular thrombosis, skin graft loss and infections (Reisner et al., 2015). Overall, these studies highlight the need for better and safer procedures that can meet the individual needs of transgender men. While sexual functioning is achieved in many patients receiving phalloplasty, these studies also reported a number of patients with poor sexual functioning (Garaffa et al., 2010; Garcia et al., 2014; Hoebeke et al., 2010; Selvaggi et al., 2007).

The majority of these studies sampled current patients at their clinics or past patients, limiting representation of transgender men to those who clinically presented themselves and sought phalloplasty. Not all transgender men seek phalloplasty as part of their medical transition (Bockting et al., 2009). Future studies should broaden their sampling to produce more generalizable results to the entire transgender male community. Only one article discussed sexual satisfaction among transgender men that have not undergone gender-affirming surgery (Bockting et al., 2009). All seven articles included data pertaining to sexual function of transgender men who opted for phalloplasty, while there were not any mentions of metoidioplasty.

Transactional Sex

Transactional sex is the undertaking of an act or the practice of sexual acts in exchange for money, goods, paraphernalia, or a service (Nadal, Davidoff, & Fujii-Doe, 2014; Nadal, Skolnik, & Wong, 2012). Transgender individuals reported having higher rates of discrimination, unemployment, poverty, and homelessness, which contributes to a lack of income and low socioeconomic status (Nadal et al., 2014). This often leaves transgender persons with few or no opportunities to earn an income (Nemoto, Sausa, Operario, & Keatley, 2006; Sausa, Keatley, & Operario, 2007; Stephens et al., 2010). The majority of the research showed transgender individuals resorted to transactional sex as a form of survival sex to earn money and pay for necessities (Sevelius, 2009). In one research study, 33.3% of transgender respondents reported participating in sex work (Clements-Nolle et al., 2001; Reisner et al., 2015). Both transgender women and transgender men have reported high rates of sex work (Stephens et al., 2010). Existing research on transactional sex among transgender women has investigated the sexual habits, sexual identity, and motivations for sex work among this population. A limited number of studies have explored transactional sex among transgender men (Rowniak et al., 2011; Sevelius, 2009; Stephens et al., 2010).

Of the 33 reviewed studies, only three studies that measured transactional sex included both transgender women and transgender men. None of the studies solely looked at transgender men's experiences with sex work. The recruitment strategies varied by study. All three studies measured sexual risk behaviors, HIV prevalence, and STIs (Clements-Nolle et al., 2001; Reisner et al., 2010; Stephens et al., 2010). None of the included studies looked only at transactional sex; instead, sex work was included as a small component in terms of studying HIV prevalence and sexual risk behaviors (Clements-Nolle et al., 2001; Reisner et al., 2010; Stephens et al., 2010). Two studies asked one question about the participation in transactional sex for transgender men (Clements-Nolle et al., 2001; Stephens et al., 2010). Another study analyzed the rates of sex work among transmasculine youth and how this impacted the sociostructural and psychosocial risk factors of STI seropositivity and risk behavior (Reisner et al., 2015). Some studies recruited participants by using data collected at health clinics, targeted sampling, respondent-driven sampling, agency referrals, and participatory research strategies (Clements-Nolle et al., 2001; Reisner et al., 2015; Stephens et al., 2010). Study recruitment took place in the United States, specifically in two metropolitan cities—Boston and San Francisco (Clements-Nolle et al., 2001; Reisner et al., 2015; Stephens et al., 2010). The samples sizes ranged from 69 to 123 transgender men (Clements-Nolle et al., 2001; Reisner et al., 2015; Stephens et al., 2010). Two studies used clinical interviews and one study used electronic health records to measure participants' involvement in sex work (Clements-Nolle et al., 2001; Reisner et al., 2015; Stephens et al., 2010).

All three studies found that transgender individuals had high rates of a history of transactional sex (Clements-Nolle et al., 2001; Reisner et al., 2015; Stephens et al., 2010). One study found that one-third (31%) of transgender male participants engaged in transactional sex or survival sex (Clements-Nolle et al., 2001). Another study found that 1.2% of transgender men reported sex work as compared to 33.3% of transgender women (Reisner et al., 2015). Another study reported that 41% of transgender men engaged in sexual behavior with casual partners, and 4% specifically with exchange, or transactional sex, partners (Clements-Nolle et al., 2001). The wide variation of reported transactional sex among transgender men is due to the limited data from the included research studies. None of the studies looked solely at transactional sex in transgender men and their reasons for undergoing this type of work unless due to extreme financial hardship.

From the limited data available, transgender men reported participating in transactional sex because of employment discrimination, social stigma, and limited economic opportunities to earn an income (Nemoto et al., 2006; Sausa et al., 2007; Stephens et al., 2010). One study found that people engaged in transactional sex for money, drugs, shelter, and food (Clements-Nolle et al., 2001). In addition, one study found that transgender individuals experienced a great risk of unemployment, housing, and health care discrimination, and were more likely to have a greater risk for HIV due to their participation in transactional sex (Bockting et al., 2005; Boles & Elifson, 1994; Pang, Pugh, & Catalan, 2004). Transgender men reported having more stable housing, education, and a slightly higher income level as compared to transgender women (Clements-Nolle et al., 2001);

81% of transgender men were employed, as compared to 32% of transgender women, who reported engaging in sex work as the most common way to earn money in the past six months (Clements-Nolle et al., 2001).

Discussion

The results of the scoping review point to several significant gaps in the literature around transgender men's sexual health. First and most important, a large number of articles in the initial title and abstract review did not adequately collect data on gender identity. These studies did not distinguish between transgender men and transgender women and therefore could not be included in the review. A two-step, gender-related measure should be used to ascertain an individual's current gender identity and assigned sex at birth. This includes asking individuals what is their current gender identity and their sex assigned at birth, which would allow individuals the freedom to identify themselves (The Williams Institute, 2013).

Regarding the articles on sexual behavior and sexual identity, the studies were often limited in their samples and methods. Using a chain-referral sampling system limits participants to only those who know at least one other trans-masculine person (Bauer et al., 2013; Kenagy et al., 2005; Kenagy, 2005a; Xavier & Bradford, 2005) and excludes transgender men who may not be as connected to the transgender community. Many transgender people find community via social media and social support groups on the Internet. Using the Internet in recruitment could greatly increase the accessibility to more of the transgender community. Clinical samples included only transgender men who received medical gender-affirmation services in a clinical setting (Cerwenka et al., 2014). Although this does shed light on the experiences of transgender men who seek surgical gender affirmation, it is a limited view of the experiences of transgender men as a whole, as many transgender individuals do not seek surgery due to cost and personal choice. Some clinical samples also collected data through retrospective review of electronic medical records, which were often incomplete, missing data, and difficult to interpret (Reisner et al., 2015). In addition, several of the research studies focused too much on medical transition and hormonal therapy. Instead, research should not focus on transgender men who medically transition but also note that many transgender individuals do not transition or receive medical gender-affirmation surgeries. The differences and experiences of these two groups and their sexual health contrast greatly.

Using the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR) criteria as a way to define scales to classify sexual and gender orientation does not take into account the fluidity of identity and how it may change over time (Cerwenka et al., 2014; Meier et al., 2013). Relying on clinical diagnosis of gender identity disorder excludes transgender men who may not present qualifications for disorder (Cerwenka et al., 2014; Reisner et al., 2015). In addition, the current DSM (DSM-5) no longer uses the *term gender identity disorder* and instead uses the term *gender dysphoria*. Future research should take into account the difference in the terminology and strive to use the correct term of gender dysphoria. Many of these study samples were noted to be small and homogenous, largely consisting of transgender men who were White and considered "out" as transgender, making results not generalizable to the greater transgender men community (Bockting et al., 2009; Chen et al., 2010; Doorduin & Berlo, 2014; Kenagy, 2005b; Reisner et al., 2010; Reisner et al., 2015; Rowniak & Chesla, 2013; Rowniak et al., 2011; Sevelius, 2009; Williams et al., 2016; Yerke & Mitchell, 2011). Many of the participants had a high level of education, which could also influence more liberal ideologies and behaviors (Meier et al., 2013). Studies also reported a lack of a control group included in their samples, making it difficult to interpret results without a comparison group and to ascertain differences in the behaviors between transgender men and other groups (Bockting et al., 2005; Meier et al., 2013). Some studies recruited only transgender men who had been undergoing hormone therapy for at least a year, excluding those who were not currently using hormone therapy or who chose not to elect hormone therapy as part of their gender transition (Rowniak & Chesla, 2013).

Many studies also took place in urban centers and were able to report only the experiences of transgender men in cities, leaving the stories of those in rural and suburban environments untold (Chen et al., 2010; Rowniak & Chesla, 2013; Rye & Meaney, 2007; Williams et al., 2016). Many of these studies relied on interviews with transgender men; while this method allows researchers to gain valuable insight into the personal lives of trans men, there may be a social desirability bias, and transgender men might not feel comfortable sharing personal and intimate information with a researcher (who is often cisgender) (Rowniak & Chesla, 2013; Rye & Meaney, 2007; Sevelius, 2009; Williams et al., 2016).

Studies that looked at postsurgical sexual pleasure also faced similar limitations. There was often selection bias among these studies that limited participants to trans men who were willing and able to attend a clinic or patients who had more favorable outcomes and therefore were more willing to participate in studies (Garcia et al., 2014; Wierckx et al., 2011). Some patients also refused to participate (one study reported greater than 30% refusal rate, making it impossible to retrieve postoperative information; Wierckx et al., 2011). Samples were small in these studies, resulting in nongeneralizable results. The cross-sectional design of one study was also a limitation, because results on preoperative sexual pleasure were drawn from participants' self-reported sexual history, which may be influenced by later events (Wierckx et al., 2011). Postoperative sexual pleasure is also largely dependent on the type of procedure, which varies among centers (Wierckx et al., 2011).

Regarding sexual function, the operationalization of sexual function has been made to insertive penetrative sex (typically not achieved with metoidioplasty, creating a gap in data on sexual functioning in transgender men with metoidioplasty (Selvaggi et al., 2007). Sexual function of the neophallus was operationalized as ability to engage in insertive penetrative sex (Reisner et al., 2015). However, as previously discussed, transgender men are not exclusively engaging in insertive penetrative sexual intercourse. A study conducted by Bockting et al. (2009) found that one-third of their participants who were unable to proceed with surgery regularly engaged in receptive vaginal intercourse (Bockting et al., 2009). Transgender men have reported a variety of cisgender and transgender sexual partners (Bockting et al., 2009), yet most of these studies looked only at sexual function in terms of ability to achieve insertive vaginal sex. Further research should consider sexual functioning with regard to a wider range of behaviors and partners.

Research that looked at condom use among transgender men was also limited by small, nongeneralizable sample sizes (Bockting et al., 2009; Chen et al., 2010; Horvath et al., 2014; Kenagy et al., 2005; Reisner et al., 2010; Rowniak et al., 2011; Sevelius, 2009). Two studies employed retrospective medical chart reviews for their study methods, which may be incomplete or missing information on patients (Reisner & Murchison, 2016; Reisner et al., 2015). Many of these studies did not look at condom use as a main focus of research but rather as a measure of various sexual risk behaviors. In addition, "safer sex" was defined only as intercourse with a condom, and there is a need to understand the utilization of PrEP and microbicides among transgender men.

The data on transactional sex were limited, with a lack of data on the rates of transactional sex and motivation for sex work among transgender men (Clements-Nolle et al., 2001; Stephens et al., 2010). Articles describing transactional sex work among transgender men were limited by small convenience samples or by sampling methods, such as review of health records, reliance on visits to STI clinics, and respondent-driven sampling (Clements-Nolle et al., 2001; Reisner & Murchison, 2016; Rowniak et al., 2011; Stephens et al., 2010). Though sample sizes might have been larger in some studies, the proportion of participants who actually participated in sex work was small, making it difficult to draw conclusions about transgender men in sex work (Reisner et al., 2015; Stephens et al., 2010).

This scoping review also sought to discuss the sexual wellness of transgender men, but there were no articles on sexual wellness that fit the inclusion criteria. Several articles on this topic that passed the title and abstract review were abstracts only and therefore could not be included in the final review.

Recommendations for Future Research

Much of the research in this review looked at sexual behaviors of transgender men with cisgender partners, but transgender men also engage in sexual behavior with people of other gender identities; studies should consider a broader definition of both sexual behavior and partner types. Similarly, these studies showed fluidity in transgender men's sexuality and behaviors over time and through transition. Future research should include how sexual behaviors may change along with this fluidity, such as changes in types of partners and the communities with which transgender men may affiliate. Also important to future research is how transgender men seek out sexual partners. Future studies might further consider romantic relationships and casual sex in trans-masculine communities and their differing and associated sexual risk factors, as has been done recently with other sexual minorities. In addition, future research should include trans-masculine individuals who do not identify as transgender, such as non-binary-identifying and gender-nonconforming people (Bauermeister et al., 2013; Bauermeister, Leslie-Santana, Johns, Pingel, & Eisenberg, 2010; Bauermeister, Ventuneac, Pingel, & Parsons, 2012).

To gain a better understanding of transgender men's experiences of sexual pleasure, research should focus on gaining a more representative sample. This includes increasing sample size and recruiting participants beyond just those who are receiving hormone replacement therapy and/or gender-affirmation surgery. Also, the definitions that are used in research to define sexual function and pleasure are very narrow and limiting. Future research should consider expanding the definitions of these two areas.

Larger studies involving more transgender men are also needed to better understand condom use in this population and be able to generalize results to the larger community of transgender men. Specific reasons for not using condoms as well as the sex acts, types of partners, and health risks associated with using condoms should be explored, as should condom use after gender-affirming surgery. Due to the advent of PrEP and other nonbarrier methods of reducing the transmission of HIV and STIs, such as microbicides, attitudes regarding these methods and rates of their use should also be included in future studies.

The articles included in this scoping review provided important data that describe various aspects of sexual health and behaviors of transgender men. However, many gaps in research were identified in terms of components of sexual health. Sexual health, according to the World Health Organization, is defined in this way:

> A state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. (World Health Organization, n.d.)

The major components of sexual health identified through this scoping review include sexuality, pleasure, safe sex, sexual relationships, coercion, discrimination, and violence. In Table 2, the research team listed the research studies

Table 2. *Components of Sexual Health and Included Articles*

Components	Relevant Reviewed Articles
Sexuality	Bauer et al. (2013) Cerwenka et al. (2014) Doorduin & Berlo (2014) Schilt & Windsor (2014) Yerke & Mitchell (2011) Bockting et al. (2009) Bauer et al. (2012)
Pleasure	De Cuypere et al. (2005) Wierckx et al. (2011) Garcia et al. (2014) Bockting et al. (2009) Cerwenka et al. (2014)
Safe sex	Bauer et al. (2012) Reisner et al. (2010) Kenagy (2005b)
Sexual relationships	None
Coercion	None
Discrimination	None
Violence	None

corresponding to each identified component of sexual health. Many areas are completely lacking research or show that little to no research has been conducted in terms of transgender men's sexual health. Research on transgender men's sexual health and behavior needs to mature, increasing the size and heterogeneity of sampling to produce data that can be more generalizable to the larger community of transgender men. More research is necessary regarding transgender men in sex work, something that is largely considered only for transgender women. With respect to research on sex and sexual behaviors, future research should take into account the sexual fluidity of transgender men and examine a variety of partner preferences and behaviors rather than the behaviors of transgender men with cisgender (female) partners. Research should also consider transgender men who do not choose medical transition, because their sexual health and experiences vary from those who choose to medically transition. Research should also consider whether people have access to gender-affirming sexual health and education, because they may not have access to these resources.

Conclusion

Through conducting a comprehensive scoping review, the literature regarding transgender men's sexual health was critiqued and major gaps were identified. Existing research shows that transgender men have a wide range of sexual behaviors and sexual identities which carry broad implications for their sexual health (Bauer et al., 2013; Bauer et al., 2012; Cerwenka et al., 2014; Chen et al., 2010; Doorduin & Berlo, 2014; Kenagy et al., 2005; Meier et al., 2013; Reisner & Murchison, 2016; Rowniak & Chesla, 2013; Schilt & Windsor, 2014; Sevelius, 2009; Yerke & Mitchell, 2011). Transgender men may have a variety of sexual partners, and their sexual behaviors may differ widely depending on the type of partners they choose (Chen et al., 2010; Kenagy et al., 2005; Reisner et al., 2010; Williams et al., 2016). There are large gaps in research, however, with little literature specific to trans men, and most of the existing research having a narrow focus on trans men's sexual behaviors with cisgender people.

Future research should focus on the sexual behaviors of transgender men with other transgender men and/or transgender women partners, rather than focusing on cisgender partners, as was common in the articles reviewed. Considering the fluidity of transgender men's sexuality, studies should further examine how transgender men's sexual behaviors might change in tandem, looking at changes in types of partners and communities with which they might associate. Research should also focus on how transgender men seek out sexual partners and how this is associated with sexual risk behaviors. Future studies should also analyze the differing sexual risks between romantic relationships and casual sex in this community, as has been done recently with other sexual minorities (Bauermeister et al., 2010; Bauermeister et al., 2012; Bauermeister et al., 2013). Further studies should explore the reasons why transgender men might not use condoms during intercourse, as well as the sex acts, types of partners, and health risks associated with condom use. Sexual function was typically measured in relation to outcomes of phalloplasty and vaginal sex with cisgender women, leaving gaps in research on transgender men who have not had phalloplasty or who have other sexual partners (Reisner et al., 2015). Future studies on sexual functioning should seek to close these gaps and delve into the sexual functioning of transgender men who have chosen not to undergo these surgeries. There should also be a shift in focus from sexual functioning in vaginal sex with cisgender women to sexual functioning with any type of partner and involving any type of sexual behavior.

While literature regarding the transgender community is lacking as a whole, the research that exists shows clear disparities in health access, promotion, and health outcomes compared to the cisgender majority. To address these disparities, research and programmatic attention is required that aims to improve the sexual health outcomes of transgender men through sustained interventions in diverse communities. A specific focus on the structural barriers to accessing sexual health care for transgender men is also urgently needed. This scoping review has illustrated the gaps that exist in research around the sexual health of transgender men, and calls for greater research and programmatic attention to complete these gaps and close the sexual health disparities currently experienced by transgender men.

References

Abramson, P. R., & Pinkerton, S. D. (1995). *With pleasure: Thoughts on the nature of human sexuality.* New York, NY: Oxford University Press.

Anderson, S., Allen, P., Peckham, S., & Goodwin, N. (2008). Asking the right questions: Scoping studies in the commissioning of research on the organisation and delivery of health services. *Health Research Systems and Policy*, *6*, 7. doi:10.1186/1478-4505-6-7

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32.

Bauer, G. R., Redman, N., Bradley, K., & Scheim, A. I. (2013). Sexual health of trans men who are gay, bisexual, or who have sex with men: Results from Ontario, Canada. *International Journal of Transgenderism*, *14*(2), 66–74. doi:10.1080/15532739.2013.791650

Bauer, G. R., Travers, R., Scanlon, K., & Coleman, T. A. (2012). High heterogeneity of HIV-related sexual risk among transgender people in Ontario, Canada: A province-wide respondent-driven sampling survey. *BMC Public Health*, *12*(1), 292. doi:10.1186/1471-2458-12-292

Bauermeister, J. A., Hickok, A. M., Meadowbrooke, C., Veinot, T., & Loveluck, J. (2013). Self-efficacy among young men who have sex with men: An exploratory analysis of HIV/AIDS risk behaviors across partner types. *AIDS and Behavior*, *18*(1), 69–77. doi:10.1007/s10461-013-0481-5

Bauermeister, J. A., Leslie-Santana, M., Johns, M. M., Pingel, E., & Eisenberg, A. (2010). Mr. Right and Mr. Right Now: Romantic and casual partner-seeking online among young men who have sex with men. *AIDS and Behavior*, *15*(2), 261–272. doi:10.1007/s10461-010-9834-5

Bauermeister, J. A., Ventuneac, A., Pingel, E., & Parsons, J. T. (2012). Spectrums of love: Examining the relationship between romantic motivations and sexual risk among young gay and bisexual men. *AIDS and Behavior*, *16*(6), 1549–1559. doi:10.1007/s10461-011-0123-8

Bockting, W., Benner, A., & Coleman, E. (2009). Gay and bisexual identity development among female to male transsexuals in North America: Emergence of a transgender sexuality. *Archives of Sexual Behavior*, *38*(5), 688–701. doi:10.1007/s10508-009-9489-3

Bockting, W., Coleman, E., Deutsch, M. B., Guillamon, A., Meyer, I., Meyer, W., … Ettner, R. (2016). Adult development and quality of life of transgender and gender nonconforming people. *Current Opinion in Endocrinology & Diabetes and Obesity*, *23*(2), 188–197. doi:10.1097/med.0000000000000232

Bockting, W. O., Robinson, B. E., Forberg, J., & Scheltema, K. (2005). Evaluation of a sexual health approach to reducing HIV/STD risk in the transgender community. *AIDS Care*, *17*(3), 289–303. doi:10.1080/09540120412331299825

Boles, J., & Elifson, K. W. (1994). The social organization of transvestite prostitution and AIDS. *Social Science and Medicine*, *39*(1), 85–93. doi:10.1016/0277-9536(94)90168-6

Castelo-Branco, C., León Huezo, M., & Ballescá Lagarda, J. L. (2008). Definition and diagnosis of sexuality in the XXI century. *Maturitas*, *60*, 50–58. doi:10.1016/j.maturitas.2008.02.002

Centers for Disease Control and Prevention. (2015). How effective are birth control methods. Retrieved from http://www.cdc.gov/reproductivehealth/unintendedpregnancy/contraception.htm

Cerwenka, S., Nieder, T. O., Cohen-Kettenis, P., De Cuypere, G., Haraldsen, I. R. H., Kreukels, B. P. C., & Richter-Appelt, H. (2014). Sexual behavior of gender-dysphoric individuals before gender-confirming interventions: A European multicenter study. *Journal of Sex and Marital Therapy*, *40*(5), 457–471. doi:10.1080/0092623X.2013.772550

Chen, S., McFarland, W., Thompson, H. M., & Raymond, H. F. (2010). Transmen in San Francisco: What do we know from HIV test site data? *AIDS and Behavior*, *15*(3), 659–662. doi:10.1007/s10461-010-9859-9

Clements-Nolle, K., Marx, R., Guzman, R., & Katz, M. (2001). HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: Implications for public health intervention. *American Journal of Public Health*, *91*(6), 915–921. doi:10.2105/ajph.91.6.915

De Cuypere, G., T'Sjoen, G., Beerten, R., Selvaggi, G., De Sutter, P., Hoebeke, P., … Rubens, R. (2005). Sexual and physical health after sex reassignment surgery. *Archives of Sexual Behavior*, *34*(6), 679–690. doi:10.1007/s10508-005-7926-5

De Haan, G., Santos, G., Arayasirikul, S., & Raymond, H. F. (2015). Non-prescribed hormone use and barriers to care for transgender women in San Francisco. *LGBT Health*, *2*(4), 313–323. doi:10.1089/lgbt.2014.0128

Devor, H. (1993). Sexual orientation identities, attractions, and practices of female-to-male transsexuals. *Journal of Sex Research*, *30*(4), 303–315. doi:10.1080/00224499309551717

Dimitrov, D. T., Mâsse, B. R., & Donnell, D. (2016). PrEP adherence patterns strongly impact individual HIV risk and observed efficacy in randomized clinical trials. *Journal of Acquired Immune Deficiency Syndromes*, 72(4), 444–451. doi:10.1097/qai.0000000000000993

Doorduin, T., & Berlo, W. V. (2014). Trans people's experience of sexuality in the Netherlands: A pilot study. *Journal of Homosexuality*, *61*(5), 654–672. doi:10.1080/00918369.2014.865482

Enrich, K., Freeman, G. K., Richards, S. C., Robinson, I. C., & Shepperd, S. (2002). How to do a scoping exercise: Continuity of care. *Research, Policy, and Planning*, *20*(1), 25–29. Retrieved from http://ssrg.org.uk/wp-content/uploads/2012/02/rpp201/shortreport1.pdf

Erickson-Schroth, L. (2014). *Trans bodies, trans selves: A resource for the transgender community*. New York, NY: Oxford University Press.

Fenway Health. (2010, January). Transgender. In *Glossary of gender and transgender terms*. Retrieved from http://www.fenwayhealth.org/documents/the-fenway-institute/handouts/Handout_7-C_Glossary_of_Gender_and_Transgender_Terms__fi.pdf

Flores, A. R., Herman, J. L., Gates, G. J., & Brown, T. N. T. (2016, June). *How many adults identify as transgender in the United States?* Los Angeles, CA: The Williams Institute.

Garaffa, G., Christopher, N. A., & Ralph, D. J. (2010). Total phallic reconstruction in female-to-male transsexuals. *European Urology*, *57*(4), 715–722. doi:10.1016/j.eururo.2009.05.018

Garcia, M. M., Christopher, N. A., De Luca, F., Spilotros, M., & Ralph, D. J. (2014). Overall satisfaction, sexual function, and the durability of neophallus dimensions following staged female to male genital gender confirming surgery: The Institute of Urology, London U.K. experience. *Translational Andrology and Urology*, *3*(2), 156–162. doi:10.3978/j.issn.2223-4683.2014.04.10

Herbst, J. H., Jacobs, E. D., Finlayson, T. J., McKleroy, V. S., Neumann, M. S., & Crepaz, N. (2008). Estimating HIV prevalence and risk behaviors of transgender persons in the United States: A systematic review. *AIDS and Behavior*, *12*(1), 1–17. doi:10.1007/s10461-007-9299-3

Hidalgo Landa, A., Szabo, I., Le Brun, L., Owen, I., Fletcher, G., & Hill, M. (2011). An evidence-based approach to scoping reviews. *Electronic Journal Information Systems*, *14*(1), 46–52. Retrieved from http://www.ejise.com

Hoebeke, P. B., Decaestecker, K., Beysens, M., Opdenakker, Y., Lumen, N., & Monstrey, S. M. (2010). Erectile implants in female-to-male transsexuals: Our experience in 129 patients. *European Urology*, *57*(2), 334–341. doi:10.1016/j.eururo.2009.03.013

Horvath, K. J., Iantaffi, A., Swinburne-Romine, R., & Bockting, W. (2014). A comparison of mental health, substance use, and sexual risk behaviors between rural and non-rural transgender persons. *Journal of Homosexuality*, *61*(8), 1117–1130. doi:10.1080/00918369.2014.872502

Hull, T. H. (2008). Sexual pleasure and wellbeing. *International Journal of Sexual Health*, *20*, 133–134. doi:10.1080/19317610802157234

Iantaffi, A., & Bockting, W. O. (2011). Views from both sides of the bridge? Gender, sexual legitimacy, and transgender people's experiences of relationships. *Culture, Health, and Sexuality*, *13*(3), 355–370. doi:10.1080/13691058.2010.537770

Jackson, S. (2006). The complexity (and limits) of heteronormativity. *Feminist Theory*, *7*(1), 105–121. doi:10.1177/1464700106061462

Jin, F., Jansson, J., Law, M., Prestage, G. P., Zablotska, I., Imrie, J. C. G., & Wilson, D. P. (2010). Per-contact probability of HIV transmission in

homosexual men in Sydney in the era of HAART. *AIDS*, *24*(6), 907–913. doi:10.1097/QAD.0b013e3283372d90

The Joanna Briggs Institute. (2015). Methodology for JBI scoping reviews. In *Joanna Briggs Institute reviewers' manual: 2015 edition supplement*. Adelaide, Australia: The Joanna Briggs Institute.

Kashdan, T. B., Adams, L. M., Farmer, A. S., Ferssizidis, P., McKnight, P. E., & Nezlek, J. B. (2014). Sexual healing: Daily diary investigation of the benefits of intimate and pleasurable sexual activity in socially anxious adults. *Archive of Sexual Behavior*, *43*, 1417–1429. doi:10.1007/s10508-013-0171-4

Kenagy, G. P. (2005a). The health and social service needs of transgender people in Philadelphia. *International Journal of Transgenderism*, *8*(2–3), 49–56. doi:10.1300/J485v08n02_0

Kenagy, G. P. (2005b). Transgender health: Findings from two needs assessment studies in Philadelphia. *Health and Social Work*, *30*(1), 19–26. doi:10.1093/hsw/30.1.19

Kenagy, G. P., Hsieh, C., & Kennedy, G. (2005). The risk less known: Female-to-male transgender persons' vulnerability to HIV infection. *AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV*, *17*(2), 195–207. doi:10.1080/19540120512331325680

Lawrence, A. A. (2003). Factors associated with satisfaction or regret following male-to-female sex reassignment surgery. *Archives of Sexual Behavior*, *32*, 299–315. doi:10.1023/A:1024086814364

Lobato, M. I., Koff, W. J., Manenti, C., Da Fonseca Seger, D., Salvador, J., De Garca Borges Fortes, M., … Henriques, A. A. (2006). Follow-up of sex reassignment surgery in transsexuals: A Brazilian cohort. *Archives of Sexual Behavior*, *35*(6), 711–715. doi:10.1007/s10508-006-9074-y

Meier, S. C., Pardo, S. T., Labuski, C., & Babcock, J. (2013). Measures of clinical health among female-to-male transgender persons as a function of sexual orientation. *Archives of Sexual Behavior*, *42*(3), 463–474. doi:10.1007/s10508-012-0052-2

Nadal, K. L., Davidoff, K. C., & Fujii-Doe, W. (2014). Transgender women and the sex work industry: Roots in systemic, institutional, and interpersonal discrimination. *Journal of Trauma and Dissociation*, *15*(2), 169–183. doi:10.1080/15299732.2014.8

Nadal, K. L., Skolnik, A., & Wong, Y. (2012). Interpersonal and systemic microaggressions toward transgender people: Implications for counseling. *Journal of LGBT Issues in Counseling*, *6*(1), 55–82. doi:10.1080/15538605.2012.648583

Nemoto, T., Sausa, L. A., Operario, D., & Keatley, J. (2006). Need for HIV/AIDS education and intervention for MTF transgenders. *Journal of Homosexuality*, *51*(1), 183–201. doi:10.1300/j082v51n01_09

Pang, H., Pugh, K., & Catalan, J. (2004). Gender identity disorder and HIV disease. *International Journal of STD and AIDS*, *5*(2), 130–132. doi:10.1177/095646249400500210

Reisner, S. L., & Murchison, G. R. (2016). A global research synthesis of HIV and STI biobehavioural risks in female-to-male transgender adults. *Global Public Health*, *11*(7–8), 866–887. doi:10.1080/17441692.2015.1134613

Reisner, S. L., Perkovich, B., & Mimiaga, M. J. (2010). A mixed methods study of the sexual health needs of New England transmen who have sex with nontransgender men. *AIDS Patient Care and STDs*, *24*(8), 501–513. doi:10.1089/apc.2010.0059

Reisner, S. L., Vetters, R., White, J. M., Cohen, E. L., LeClerc, M., Zaslow, S., … Mimiaga, M. J. (2015). Laboratory-confirmed HIV and sexually transmitted infection seropositivity and risk behavior among sexually active transgender patients at an adolescent and young adult urban community health center. *AIDS Care*, *27*(8), 1031–1036.

Rowniak, S., & Chesla, C. (2013). Coming out for a third time: Transmen, sexual orientation, and identity. *Archives of Sexual Behavior*, *42*(3), 449–461. doi:10.1007/s10508-012-0036-2

Rowniak, S., Chesla, C., Rose, C. D., & Holzemer, W. L. (2011). Transmen: The HIV risk of gay identity. *AIDS Education and Prevention*, *23*(6), 508–520. doi:10.1521/aeap.2011.23.6.508

Rye, B. J., & Meaney, G. J. (2007). The pursuit of sexual pleasure. *Sexuality and Culture*, *11*(1), 28–51. doi:10.1007/BF02853934

Safer, J. D., Coleman, E., Feldman, J., Garofalo, R., Hembree, W., Radix, A., & Sevelius, J. (2016). Barriers to healthcare for transgender individuals. *Current Opinion in Endocrinology and Diabetes and Obesity*, *23*(2), 168–171. doi:10.1097/med.0000000000000227

Sausa, L. A., Keatley, J., & Operario, D. (2007). Perceived risks and benefits of sex work among transgender women of color in San Francisco. *Archives of Sexual Behavior*, *36*(6), 768–777. doi:10.1007/s10508-007-9210-3

Schilt, K., & Windsor, E. (2014). The sexual habitus of transgender men: Negotiating sexuality through gender. *Journal of Homosexuality*, *61*(5), 732–748. doi:10.1080/00918369.2014.870444

Selvaggi, G., & Bellringer, J. (2011). Gender reassignment surgery: An overview. *Nature Reviews Urology*, *8*(5), 274–282. doi:10.1038/nrurol.2011.46

Selvaggi, G., Monstrey, S., Ceulemans, P., T'Sjoen, G., Cuypere, G. D., & Hoebeke, P. (2007). Genital sensitivity after sex reassignment surgery in transsexual patients. *Annals of Plastic Surgery*, *58*(4), 427–433. doi:10.1097/01.sap.0000238428.91834.be

Sevelius, J. (2009). "There's no pamphlet for the kind of sex I have": HIV-related risk factors and protective behaviors among transgender men who have sex with nontransgender men. *Journal of the Association of Nurses in AIDS Care*, *20*(5), 398–410. doi:10.1016/j.jana.2009.06.001

Snell, W. E. J. (1998). The Multidimensional Sexual Self-Concept Questionnaire. In C. M. Davis, W. L. Yarber, R. Baurerman, G. Schreer, & S. L. Davis (Eds.), *Handbook of sexuality-related measures* (2nd ed., pp. 521–524). Newbury Park, CA: Sage.

Stephens, S. C., Bernstein, K. T., & Philip, S. S. (2010). Male to female and female to male transgender persons have different sexual risk behaviors yet similar rates of STDs and HIV. *AIDS and Behavior*, *15*(3), 683–686. doi:10.1007/s10461-010-9773-1

Tepper, M. S. (2000). Sexuality and disability: The missing discourse of pleasure. *Sexuality and Disability*, *18*(4), 283–290. doi:10.1023/A:1005698311392

Vesely, J., Hyza, P., Ranno, R., Cigna, E., Monni, N., Stupka, I., … Ranno, S. (2007). New technique of total phalloplasty with reinnervated latissimus dorsi myocutaneous free flap in female-to-male transsexuals. *Annals of Plastic Surgery*, *58*(5), 544–550. doi:10.1097/01.sap.0000245123.157.15

Wierckx, K., Caenegem, E. V., Elaut, E., Dedecker, D., Van De Peer, F., Toye, K., … T'Sjoen, G. (2011). Quality of life and sexual health after sex reassignment surgery in transsexual men. *Journal of Sexual Medicine*, *8*, 3379–3388. doi:10.1111/j.1743-6109.2011.02348.x

Williams, C. J., Weinberg, M. S., & Rosenberger, J. G. (2016). Trans women doing sex in San Francisco. *Archives of Sexual Behavior*, *45*(7), 1665–1678. doi:10.1007/s10508-016-0730-6

The Williams Institute. (2013, February). *Gender-related measures overview*. Los Angeles, CA: Author.

World Health Organization. (n.d.). Defining sexual health. Retrieved from http://www.who.int/reproductivehealth/topics/sexual_health/sh_definitions/en/

Xavier, J., & Bradford, J. (2005, December). *Transgender health access in Virginia: Focus group report*. Retrieved from http://www.vdh.virginia.gov/content/uploads/sites/10/2016/01/THIFocusGroupReport.pdf

Yerke, A. F., & Mitchell, V. (2011). Am I man enough yet?: A comparison of the body transition, self-labeling, and sexual orientation of two cohorts of female-to-male transsexuals. *International Journal of Transgenderism*, *13*(2), 64–76. doi:10.1080/15532739.2011.622125

APPENDIX: KEYWORDS AND SEARCH STRATEGIES USED FOR THE SIX DATABASES AND KEYWORDS

Concepts/Keywords

1. transgender
transgendered
transgender men
transgendered men
"trans men"
transmen
transman
"trans man"
"trans male"
transmale
"female to male"
FTM
trans masculine
transexual
intersex
transsexual
transvestite
sex reassignment procedure
gender minority
transsexualisms
gender reassignment
sex reassignment
sex change
gender change
"gender identity"
"gender dysphoria"
"gender dysphoric"

PubMed http://www.lib.umich.edu/database/link/9817

1.

("transgender persons"[Mesh] OR "transsexualism" [Mesh] OR "transvestism"[Mesh] OR "sex reassignment procedures"[Mesh] OR "sex reassignment surgery"[Mesh] OR "gender dysphoria"[Mesh] OR "sexual and gender disorders"[Mesh] OR transgender* [ti] OR "trans men"[ti] OR transmen [ti]OR transman[ti] OR "trans man"[ti] OR "trans male"[ti] OR transmale[ti] OR "female to male"[ti] OR FTM [ti] OR "trans masculine"[ti] OR transmasculine[ti] OR intersex*[ti] OR transsex*[ti] OR transvest*[ti] OR "gender change" [ti] OR "sex reassignment"[ti] OR "gender reassignment"[ti] OR "sex change" [ti] OR "gender minority"[ti] OR "gender minorities" [ti] OR (gender[ti] AND (dysphori*[ti] OR incongruen*[ti] OR non-conform*[ti] OR affirm*[ti] OR variant[ti])))

2.

"sexual behavior"[Mesh] OR "safe sex"[Mesh] OR "sexual abstinence"[Mesh] OR "prostitution"[Mesh] OR "unsafe sex"[Mesh] OR "condoms"[Mesh] OR "sexual partners"[Mesh] OR "libido"[Mesh] OR "sexual dysfunction, physiological"[Mesh] OR "sexual dysfunctions, psychological"[Mesh] OR "orgasm"[Mesh] OR ((sex [ti] OR sexual[ti]) AND (behavior[ti] OR behaviour[ti] OR function[ti] OR dysfunction[ti] OR wellness[ti] OR function[ti] OR satisfaction[ti])) OR orgasm [tiab] OR libido [tiab] OR condom [tiab] OR condoms[tiab] OR condom-s'[tiab] OR condomless[tiab] OR ((abstinence [ti] OR safe [ti] OR unsafe [ti] OR unprotected[ti]) AND (sex[ti] OR sexual[ti] OR intercourse[ti])) OR prostitut*[tiab] OR "sex work"[tiab] OR "sex worker"[tiab] OR "sex workers"[tiab] OR (anonymous [tiab] AND (sex[ti] OR sexual[ti]) AND partners [ti]) OR promiscu*[tiab] OR (multiple [ti] AND (sex[ti] OR sexual[ti]) AND partners[ti])

3.

(("animals"[Mesh] NOT ("animals"[Mesh] AND "humans"[Mesh]))

(1 AND 2) NOT 3

Limits: English and 2000–2078 results

CINAHL http://www.lib.umich.edu/database/link/9911

1.

(MH "transgendered persons" OR MH "transsexuals" OR MH "transvestites" OR MH "sex reassignment procedures" OR MH "sex reassignment surgery" OR MH "sexual and gender disorders" OR MH "transsexualism" OR (TI (transgender* OR "trans men" OR transmen OR transman OR "trans man" OR "trans male" OR transmale OR "female to male" OR FTM OR "trans masculine" OR transmasculine OR intersex* OR transsex* OR transvest* OR "gender change" OR "sex reassignment" OR "gender reassignment" OR "sex change" OR "gender minority" OR "gender minorities" OR (gender AND (dysphori* OR incongruen* OR non-conform* OR affirm*))))

2.

(MH "sexuality+" OR MH "condoms+" OR MH "sexual partners" OR MH "sexual health" OR MH "sexual dysfunction, male+" OR MH "sexual wellness" OR MH "sexual dysfunction, female+") OR TI (condom OR condoms OR condoms' OR condomless OR ((abstinence OR safe OR unsafe OR unprotected) OR prostitut* OR "sex work" OR "sex worker" OR "sex workers" OR (anonymous AND (sex OR sexual) AND partners) OR promiscu* OR (multiple AND (sex OR sexual) AND partners)) OR ((sex OR sexual) AND (health OR arousal* OR behavior OR behaviour OR function OR dysfunction OR satisfaction)))

1 AND 2

Limits: English and 2000–668

PsycINFO http://www.lib.umich.edu/database/link/8375

1.

(DE "transvestism" OR DE "transgender" OR DE "transsexualism" OR DE "gender identity disorder") OR TI (transgender* OR "trans men" OR transmen OR transman OR "trans man" OR "trans male" OR transmale OR "female to male" OR FTM OR "trans masculine" OR transmasculine OR transsex* OR transvest* OR "gender change" OR "sex change")

2.

DE "sexuality" OR DE "homosexuality" OR DE "bisexuality" OR DE "promiscuity" OR DE "prostitution" OR DE "safe sex" OR DE "sex roles" OR DE "sexual abstinence" OR DE "sexual arousal" OR DE "sexual intercourse (human)" OR DE "wellness" OR DE "sexual function" OR DE "condoms" OR DE "sexual partners" OR DE

"sexual risk taking" OR TI ("sexual pleasure" OR "sexual health" OR "sexual wellness" OR condom OR condoms OR condoms' OR condomless OR ((abstinence OR safe OR unsafe OR unprotected) AND sex*) OR prostitut* OR "sex work" OR "sex worker" OR "sex workers" OR (anonymous AND (sex OR sexual) AND partners) OR promiscu* OR (multiple AND (sex OR sexual) AND partners))

1 AND 2

Limits: English and 2000–2307 results

Social Sciences Abstracts http://www.lib.umich.edu/database/link/8243

1.

(DE "transgender people" OR DE "transvestites" OR DE "transgender identity" OR DE "transgender college students" OR DE "transgenderism" OR DE "transsexualism" OR DE "female-to-male transsexuals" OR DE "sexual minorities" OR DE "gender transition" OR DE "gender expression" OR DE "androgyny (psychology)" OR DE "real life test (transgenderism)" OR DE "gender spectrum" OR DE "gender-variant people" OR DE "bigender people" OR DE "gender benders (gender expression)" OR DE "multigender people" OR DE "intersex people" OR DE "gender dysphoria" OR DE "post-operative transsexuals" OR DE "pre-operative transsexuals") OR TI (transgender* OR "trans men" OR transmen OR transman OR "trans man" OR "trans male" OR transmale OR "female to male" OR FTM OR "trans masculine" OR transmasculine OR intersex* OR transsex* OR transvest* OR "gender change" OR "sex reassignment" OR "gender reassignment" OR "sex change" OR "gender minority" OR "gender minorities" OR (gender AND (dysphori* OR incongruen* OR nonconform* OR affirm* OR variant)))

2.

(DE "safe sex" OR DE "human sexuality" OR DE "age disparity in sexual relationships" OR DE "anonymous sex" OR DE "celibacy" OR DE "children—sexual behavior" OR DE "communication & human sexuality" OR DE "communication in sex" OR DE "communication & sex" OR DE "cruising (sexual behavior)" OR DE "first sexual experiences" OR DE "group sex" OR DE "institutionalized persons—sexual behavior" OR DE "LGBT people—sexual behavior" OR DE "masturbation" OR DE "men—sexual behavior" OR DE "middle-aged persons—sexual behavior" OR DE "older people—sexual behavior" OR DE "paraphilias" OR DE "premarital sex" OR DE "promiscuity" OR DE "Public sex" OR DE "sex customs" OR DE "sex education" OR DE "sexual abstinence" OR DE "sexual aggression" OR DE "sexual intercourse" OR DE "sexual orientation" OR "sexual wellness" OR "sexual health" OR "wellness" OR DE "students—sexual behavior" OR DE "teenagers—sexual behavior" OR DE "women—sexual behavior" OR DE "working class—sexual behavior" OR DE "young adults—sexual behavior" OR DE "youth—sexual behavior" OR DE "condom use" OR DE "condoms" OR DE "prostitution" OR DE "child prostitution" OR DE "church work with prostitutes" OR DE "LGBT prostitution" OR DE "male prostitution" OR DE "sacred prostitution" OR DE "teenage prostitution" OR DE "transactional sex" OR DE "sex workers" OR DE "LGBT prostitutes" OR DE "prostitutes") OR TI ("sexual pleasure" OR "sexual health" OR "sexual wellness" OR condom OR condoms OR condoms' OR condomless OR ((abstinence OR safe OR unsafe OR unprotected) AND sex*) OR prostitut* OR "sex work" OR "sex worker" OR "sex workers" OR (anonymous AND (sex OR sexual) AND partners) OR promiscu* OR (multiple AND (sex OR sexual) AND partners))

1 AND 2

Limits: English and 2000–130 results

LGBT Life http://www.lib.umich.edu/database/link/10121

1.

DE "SEXUAL minorities" OR DE "TRANSGENDER people" OR DE "TRANSSEXUALS" OR DE "CHRISTIAN transsexuals" OR DE "FEMALE-to-male transsexuals" OR DE "JEWISH transsexuals" OR DE "OLDER transsexuals" OR DE "POST-operative transsexuals" OR DE "PRE-operative transsexuals" OR DE "TRANSGENDERISTS" OR DE "TRANSSEXUAL students" OR DE "TRANSSEXUAL youth" OR DE "TRANSVESTITES" OR DE "SEX reassignment surgery" OR DE "TRANSGENDERISTS" OR DE "GENDER identity" OR DE "MASCULINE identity" OR DE "TRANSGENDERISM" OR DE "TRANSSEXUALISM" OR DE "GENDER dysphoria" OR DE "GENDER dysphoria in adolescence" OR DE "GENDER dysphoria in children" OR DE "SEXUAL minorities" OR DE "CHRISTIAN sexual minorities" OR DE "INTERSEX people" OR DE "JEWISH sexual minorities" OR DE "MIDDLE-aged sexual minorities" OR DE "NATIVE American sexual minorities" OR DE "OLDER sexual minorities" OR DE "SEXUAL minority men" OR DE "GENDER expression" OR DE "GENDER bending (gender expression)" OR TI (transgender* OR "trans men" OR transmen OR transman OR "trans man" OR "trans male" OR transmale OR "female to male" OR FTM OR "trans masculine" OR transmasculine OR intersex* OR transsex* OR transvest* OR "gender change" OR "sex reassignment" OR "gender reassignment" OR "sex change" OR "gender minority" OR "gender minorities" OR (gender AND (dysphori* OR incongruen* OR non-conform* OR affirm* OR variant)))

2.

(DE "ORAL sex" OR DE "ORGASM" OR DE "SAFE sex" OR DE "SEXUAL aggression" OR DE "SEXUAL partners" OR DE "SEXUAL positions" OR DE "UNSAFE sex" OR DE "HUMAN sexuality" OR DE "ANONYMOUS sex" OR DE "CRUISING (sexual behavior)" OR DE "GROUP sex" OR DE "LGBT people—sexual behavior" OR DE "MASTURBATION" OR DE "PROMISCUITY" OR DE "SEXUAL abstinence" OR DE "HUMAN sexuality—psychological aspects" OR DE "sexual health" OR DE "sexual wellness" OR DE "wellness" OR DE "PROSTITUTION" OR DE "SEXUAL health" OR condom OR condoms OR condoms' OR condomless OR

((abstinence OR safe OR unsafe OR unprotected) AND sex*) OR prostitut* OR "sex work" OR "sex worker" OR "sex workers" OR (anonymous AND (sex OR sexual) AND partners*) OR promiscu* OR (multiple AND (sex OR sexual) AND partners*))

1 AND 2

Limits: English and 2000–1099 results

EMBASE http://www.lib.umich.edu/database/link/9173

1.

('transgender'/de OR 'male to female transgender'/de OR 'gender dysphoria'/exp OR 'transvestic fetishism'/exp OR 'sex reassignment'/de OR 'gender identity'/exp OR 'transsexuality'/exp)

2.

('transgender'/de OR 'male to female transgender'/de OR 'gender dysphoria'/exp OR 'transvestic fetishism'/exp OR 'sex reassignment'/de OR 'gender identity'/exp OR 'transsexuality'/exp) OR (transgender* OR "trans men" OR transmen OR transman OR "trans man" OR "trans male" OR transmale OR "female to male" OR FTM OR "trans masculine" OR transmasculine OR intersex* OR transsex* OR transvest* OR "gender change" OR "sex reassignment" OR "gender reassignment" OR "sex change" OR "gender minority" OR "gender minorities" OR (gender AND (dysphori* OR incongruen* OR non-conform* OR affirm* OR variant))):ti

3.

1 OR 2

4.

'sexual behavior'/exp OR 'condom'/exp OR 'sexual health'/exp

5.

(condom OR condoms OR condomless OR ((abstinence OR safe OR unsafe OR unprotected) AND sex*) OR prostitut* OR "sex work" OR "sex worker" OR "sex workers" OR (anonymous AND (sex OR sexual) AND partners) OR promiscu* OR (multiple AND (sex OR sexual) AND partners) OR "sexual health" OR "sexual wellness" OR "sexual function" OR "sexual pleasure"):ti

6.

4 OR 5

7.

3 AND 6

8.

human/exp

9.

animal/exp OR nonhuman/exp

10.

9 NOT 8

11.

7 NOT 10

Limits: English and 2000–2974 results

Web of Science http://www.lib.umich.edu/database/link/10165

1. TITLE

transgender* OR "trans men" OR transmen OR transman OR "trans man" OR "trans male" OR transmale OR "female to male" OR FTM OR "trans masculine" OR transmasculine OR intersex* OR transsex* OR transvest* OR "gender change" OR "sex reassignment" OR "gender reassignment" OR "sex change" OR "gender minority" OR "gender minorities" OR (gender AND (dysphori* OR incongruen* OR non-conform* OR affirm* OR variant))

2. TITLE

condom OR condoms OR condoms' OR condomless OR ((Abstinence OR safe OR unsafe OR unprotected) AND sex*) OR prostitut* OR "sex work" OR "sex worker" OR "sex workers" OR (anonymous AND (sex OR sexual) AND partners) OR promiscu* OR (multiple AND (sex OR sexual) AND partners) OR "sexual health" OR "sexual wellness" OR "sexual function" OR "sexual pleasure"

1 AND 2 721

Limits: English and 2000–103 results